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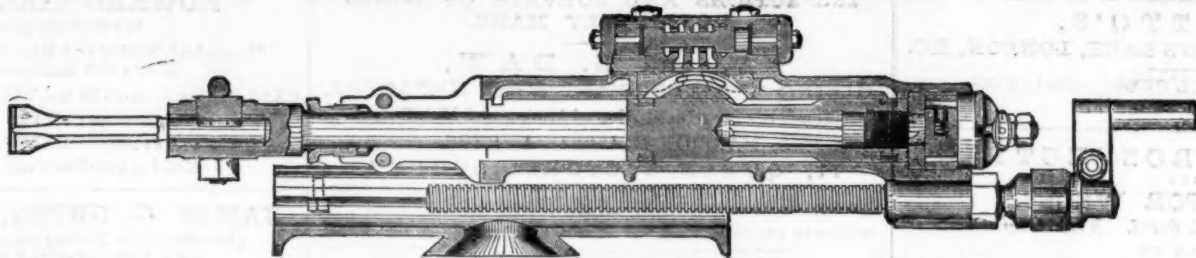
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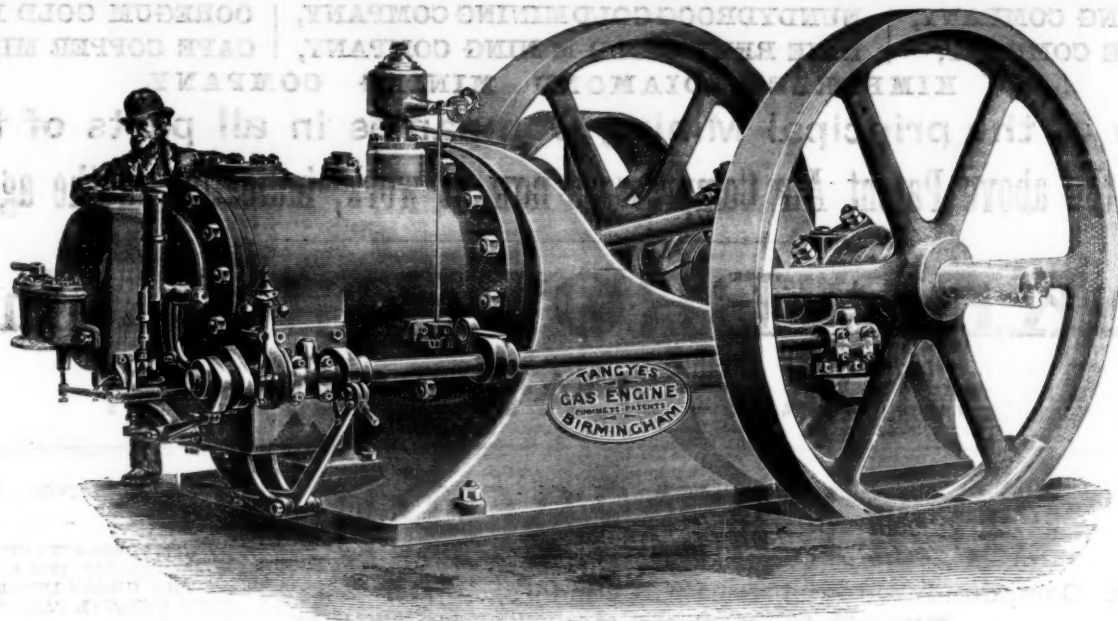
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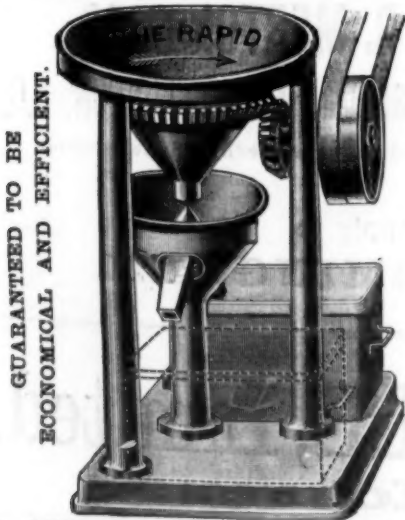
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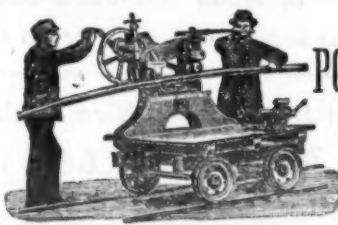
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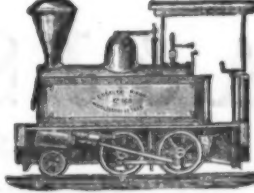
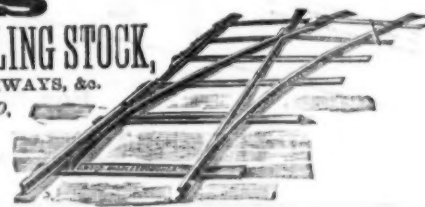
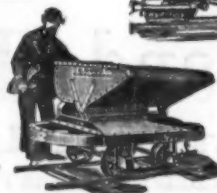
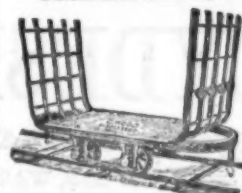
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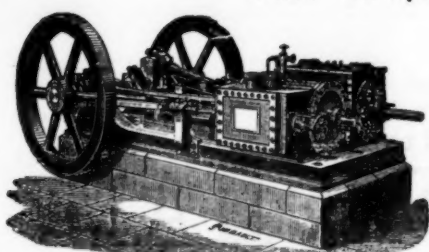
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Telegrams—Green, Foundry, Aberystwyth.

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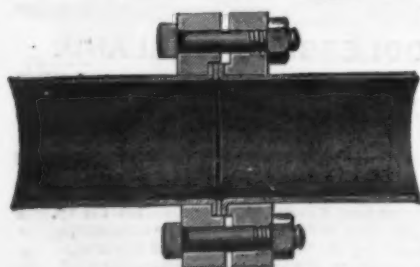
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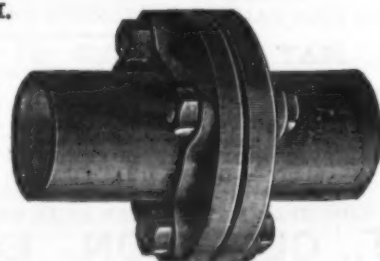
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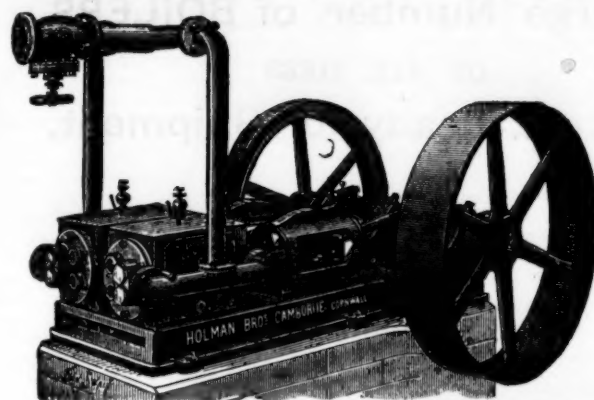
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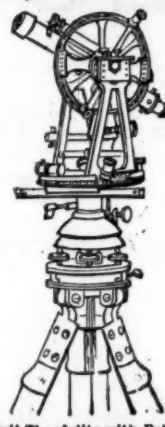
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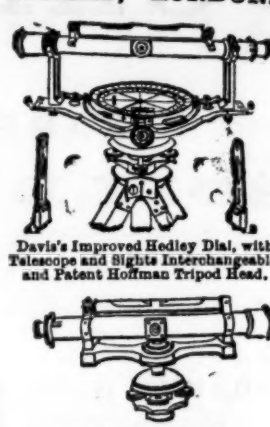
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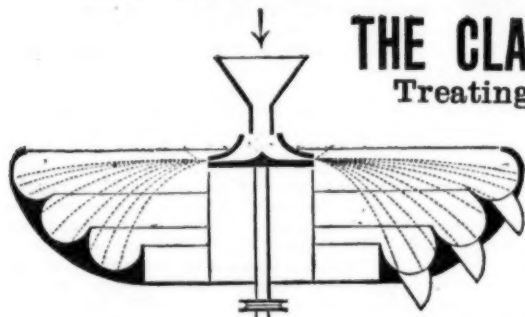
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NEW PATENTS.

LIST OF APPLICATIONS for New Patents relating to Mining
Metallurgical, Engineering, Railway and kindred matters,
specially compiled from official sources for the "Mining
Journal" by Messrs. Hayner and Company, Patent Agents,
37, Chancery Lane, London, W.C., who will forward all in-
formation regarding them free on application.

- 4901 Benjamin Harold Halstead and Louis Kershaw, 321, High Holborn, London.—Improved apparatus for cleaning miners' safety lamps.—March 5.
- 4911 Eberhard Lager, 45, Southampton Buildings, Chancery Lane, London.—An improved steam turbine wheel.—March 5.
- 4903 William Auton (Gottlieb Schonheyder, 23, Southampton Buildings, Chancery Lane, London.—Improvements in velocipedes.—March 6.
- 4913 Emil Fleischhauer and Max Bornstein, of the firm of Joh. Friedr. Wallman and Co., 323, High Holborn, London.—Improvements in and relating to the purification of gas.—March 6.
- 4923 Reginald Haddon, 18, Buckingham Street, Strand, London.—Improvement in dredging apparatus.
- 4942 Marie Méhu, 65, Chancery Lane, London.—Improvements in portable forges.—March 6.
- 4908 Ridley James Urquhart, 57, Barton Arcade, Manchester.—Improved manner of and means for obtaining motive power.—March 7.
- 4976 Luke Delaney, 31, Clifford Street, Bradford.—Improvements in furnace stokers.—March 7.
- 4981 Arthur Hutton, 128, Colmore Row, Birmingham.—An improved appliance for adjusting and holding articles whilst being drilled or bored.—March 7.
- 4980 John Cullley, 4, South Street, Finsbury, London.—Improvements in machines for crushing or pulverising rock ores and the like.—March 7.
- 4948 Thomas Greenfield, 12, Cherry Street, Birmingham.—Improvements in skinning apparatus for foundry ladles.—March 8.
- 4957 Francis Joseph Dickinson, 3, St. Nicholas Buildings, Newcastle-on-Tyne.—Improved means for effecting the couplings of travelling cranes and the like to pressure pipes.
- 4980 Hesekiah Onghley, 5, Quality Court, Chancery Lane, London.—Improvements in motive power engines.—March 8.
- 4913 Aubin Ollier, 323, High Holborn, London.—Improvements in centrifugal machines.—March 8.
- 4937 Arthur Pickard, 48, Franklin Road, Harrogate.—Improvements in driving chains and chain wheels.—March 9.
- 4944 Thomas Woods, 15, Water Street, Liverpool.—Improvements in miners' safety lamps.—March 9.
- 4946 John Henry Eastwood, 1, Market Street, Bradford.—Improvements in or relating to the flues of boiler furnaces.—March 9.
- 4925 John Arthur Turner, 323, High Holborn, London.—Improvements in devices applicable for stoking furnaces.—March 9.
- 5009 James Roots, 261, High Holborn, London.—Improvements in oil engines.—March 9.

SPECIFICATIONS PUBLISHED.
998, Heppel and others, cutting and boring coal, stone, &c., 1893; 3401, Davy gas engines, 1893; 5464, Ocheham, looms, 1893; 5636, Sinclair, rolling metal plates, &c., 1893; 5917, Simpson and Whitelaw, looms, 1893; 7453, Wilkinson, ingot moulds, 1893; 9233, Kourke and Berry, drilling and punching metals, 1893; 14,643, Sebouloff, pile drivers, 1893.
The above specifications published may be had of Messrs. Hayner and Company, 37, Chancery Lane, London, at 10d. each including postage.

NEW USES FOR PETROLEUM.—The crude petroleum discovered at Khatlan, in Beloochistan has, says the *Indian Engineer*, been found a useful agent for preventing leakage from roofs of houses during the winter rains and snow in the hills. House owners at Quetta are using it largely for plastering roofs.

CONTRACTS OPEN:

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NEERING WORK, STORES, &c.

"We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given."

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

HOME CONTRACTS.

- Extension of Quay, March 27 (Torquay).**—For the extension of the existing fishing quay, by the erection of 300 lineal feet of concrete walling for the Corporation of Torquay. Specifications and forms of tender of the harbour engineer, Mr. H. A. Garrett, Town Hall, Torquay.
- Bridges, March 28 (Winchester).**—For the reconstruction in steel and brickwork, of four arched bridges, over the London and Basingstoke Canal between Fleet and Winchester. Particulars of Mr. James Robinson, 13, Southgate Street, Winchester.
- Sinking Well, March 31 (Stafford).**—For sinking a well, 60 feet deep by 15 feet diameter, at their Grimsthorpe Station, for the Sheffield United Gaslight Company. Specifications with forms of tender on application to the company's engineer, Mr. F. W. Stevenson.
- Railway Construction, April 2.**—For the construction of new lines at Poulton, for the Lancashire and Yorkshire and London and North Western Joint Railways. Plans and specifications at the engineer's office, Hunt's Bank, Manchester.
- Sinking Pits (Aberdeenshire, Mon.)**—For the sinking of two pits near Aberdeenshire, to the steam coal measures. For particulars apply to Messrs. John Lancaster and Co. (Limited), Blaina, Mon.
- Sluice Valve, (Manchester).**—For the supply of one 24-inch sluice valve for the Waterworks Committee. Plans and specifications on application to Mr. T. H. G. Berry, Waterworks office, Town Hall, Manchester.
- Stores, (Glasgow).**—For the supply of stores for one year from April 1, for the Pumphreton Oil Company (Limited), 24, St. Vincent Place, Glasgow. Specifications and forms of tender on application at the office.
- Construction of Railway (Madrid).**—The Secretary of State for Foreign Affairs has received from Her Majesty's Ambassador at Madrid, a copy of a royal decree, inviting tenders for the construction of a railway from Manila to Teal by Calamba and Batangas. The decree can be seen at the Foreign Office, S.W., on week-days between 11 and 6.
- Driving Stone Drift, (Aldington).**—For driving a stone drift 150 yards long. For full particulars apply to the Manager, Broomhill Colliery, Aekington.

FOREIGN CONTRACT.

Railway Works, May 15 (Cairo).—For the earthwork, masonry, pitching, buildings, and other works, necessary for the construction of several lines of railway. Conditions and description of work to be seen during office hours, on application to Colonel Western, Broadway Chambers, Westminster.

A GREAT INJUSTICE is very often done because some self-assertive people imagine it is next to impossible to make an error. Shakespeare must have made an analytical study of the human heart before he uttered those warning words, "Man know thyself, then others learn to know." This is a lesson we should all try and perfect ourselves in, and when this has been done, we have to face the significant fact that unless we cultivate good health, prosperity and happiness cannot abide with us. Holloway's Pills will aid us to do this. The most eminent medical men agree that for the preservation of good health and cure of disease there is nothing to equal them.

OUR INQUIRY COLUMN.

TO CORRESPONDENTS.

Correspondents will please take note that all communications will in future be answered in this column and not through the medium of the post. All questions and replies should be accompanied by the name and address of the writer.

QUERIES.

- B. A. K.—1. Would some reader kindly inform me how to make a condenser for a coil 5 inches long with two layers of primary and ten of secondary?—2. Also, how can I make a self-amalgamating solution for zincs?
- H. DAY.—I shall be glad to know what branch of mining engineering is considered the most advantageous, both from a pecuniary point of view, and also as regards getting appointments in this country or abroad.

REPLIES.

- A. T.—We got our information from the *Bulletin des Mines*. Probably they would be able to give you the information you desire.
- G. S.—Please send us a specimen.
- J. B.—Appeared in our issue of the 10th.
- MINER.—He is a man of experience, and we think he would give you satisfaction.
- SHAREHOLDER.—The company is in liquidation.
- F. L.—The first meeting was held on the 12th.
- GAMMA.—We have communicated with the secretary, and will advise you in due course.
- YELCO.—Back numbers can be obtained of the publisher.
- H. VANE.—Please describe the construction of the machine.
- D. S.—Yes, it will expand.
- H. F.—You can buy it in any quantity.
- INVESTOR.—We think the shares will go up; it is a good investment.

A PRE-HISTORIC BLAST-FURNACE.—Professor Flinders Petrie, in 1890, convinced himself that in a remarkable mound called Tel-el-Hesi, in South Palestine, would be found the remains of what was one of the strangest places in the country down to the invasions of Sennacherib and Nebuchadnezzar. The explorations have fully verified this forecast. Amid all evidence discovered by Mr. Petrie of the civilisation of that remote age—wine presses, treacle presses, alkali burnings, and innumerable others—the most curious is the disclosure of an iron blast furnace, arranged to give strong evidence of being intended to heat, in its descent, a blast of outside air forced through passages before entering the chamber at the level where tuyères are usually found. "If this theory be correct," says Mr. Petrie, "we find 1400 years before Christ the use of the hot air blast instead of coal air, which is called a modern improvement in iron manufacture due to Neilson, and patented in 1828."

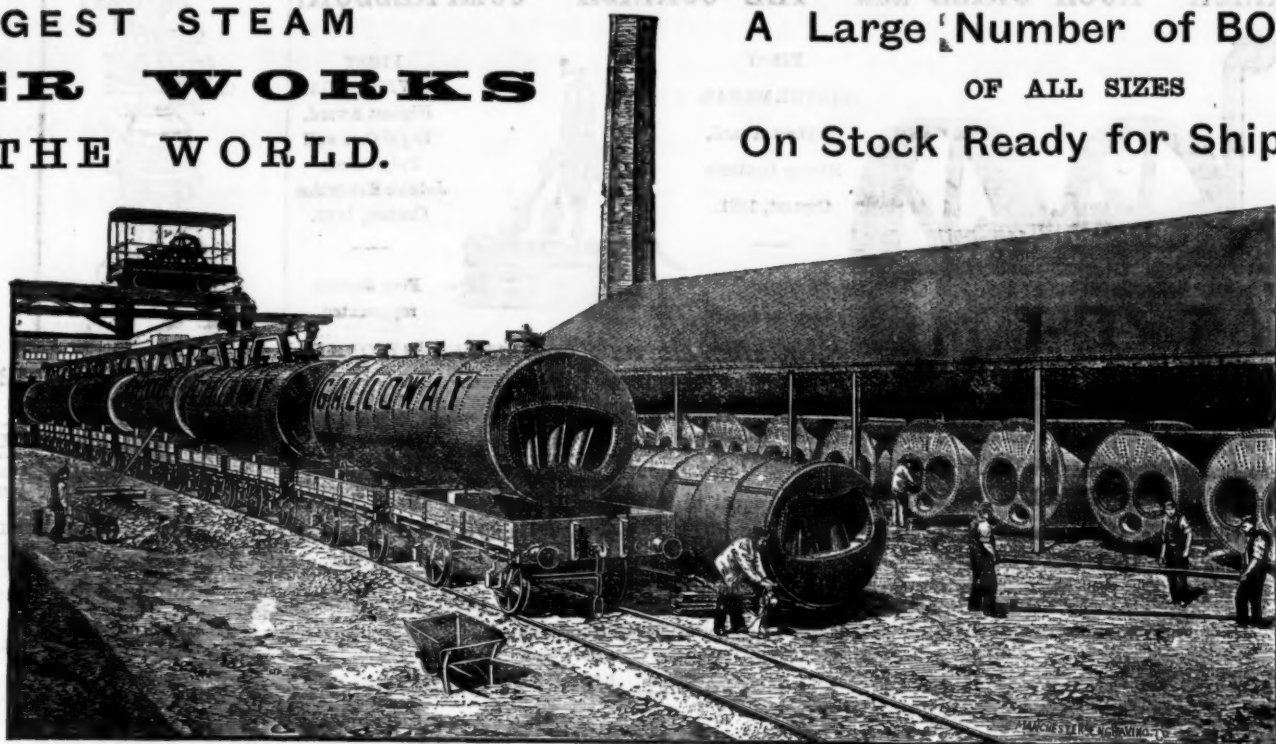
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PARIS, 1878 & 1889**

**GOLD MEDALS
AT ALL RECENT
EXHIBITIONS.**



ONTARIO MINES IN 1893.

Gold Mining makes considerable progress.—Discoveries of gold-bearing quartz on Rainy Lake.

CONSIDERABLE progress was made in 1893 in the gold mining industry of Ontario, says the *Engineering and Mining Journal*, in an article on this subject. The activity has not been confined to any one locality, but has shown itself in all parts of the province where gold has been known to exist, while discoveries of the metal have been made in districts not hitherto reckoned among the gold-bearing regions. Four mills for treating gold ores have been erected, and have worked more or less constantly during the year, and some \$35,000 in bullion has been the result. In the extreme west of the province, on Lake of the Woods, the Sultana Mine has been operated pretty steadily throughout the year. This mine is situated on an island in the lake, near Rat Portage, on the Canadian Pacific Railway, and is owned by Mr. John F. Caldwell, of Winnipeg. Three veins on the property converge into one, the largest vein having a width of 25 feet. The vein matter is quartz, iron pyrites, and a little galena, and the surrounding country rock a silicious gneiss. Three shafts have been sunk, the deepest reaching 100 feet. The ore assays from \$4 to \$20 in gold per ton, with a little silver. There are two batteries of five stamps each to treat the ore, and at present the concentrates are being stored. Several thousand dollars' worth of gold have been extracted, and the outlook is hopeful. In the same district, several miles distant, is situated the Northern Gold Company's property, about 2½ miles from Moore Bay. Mr. D. B. Burdette is the manager, and the shares of the company are held principally in Minneapolis. An experimental plant, invented by Mr. Leede, of Minneapolis, was installed early in 1893, but failed to meet the expectations of the company, and it was taken out and a Gilpin County mill put in its place about the end of the year. Sinking has been kept up on one of the veins, and rich pockets of ore have, it is said, recently been struck. Adjoining the Northern Gold Company's property is one owned by Duluth parties. Two Crawford mills were put in last summer, but satisfactory results were not obtained. At the El Divir Mine, north-east of Rat Portage, a shaft was sunk to a depth of over 100 feet, and a Crawford mill erected to treat the ore. Fire destroyed the buildings, and badly damaged the machinery after a run of about a month. It is claimed, however, that the plant did good work. A large number of other gold locations have been taken up in the Lake of the Woods district, on some of which development work has been done, and more properties continue to be bought or leased from the Crown, the whole district being as yet Crown lands. The work which has so far been done in the way of gold mining has not been sufficiently extensive to prove beyond a doubt the richness and continuity of the veins, but it certainly affords ground for encouragement. If as time goes on it is shown that the veins carry paying ore in depth as well as at the surface, this region will unquestionably take a place among the gold-producing districts of America, exploration having shown that gold is found over a wide extent of territory.

On Rainy Lake, which constitutes part of the boundary between the Province of Ontario and the State of Minnesota, discoveries of gold-bearing quartz have been made on both sides of the line during the past summer and fall. Rich specimens showing free gold have been found, and it is believed that the most valuable finds so far have been on the Ontario side. On Black Bay, 14 or 15 miles up from Fort Frances, a town-site has been laid out on American territory, and a boom is looked for when spring opens. Indeed, accounts just at hand show that the rush has already begun, and a number of prospectors are living and sleeping in tents and rude huts with the thermometer at zero. The new-born town has been named Rainy Lake City. It is the opinion of some that the discoveries here are on a continuation of the range of gold-bearing rocks found some distance north, and extending from Manitou Lake to the line of the Canadian Pacific Railway.

The Creighton Gold Mining Company has been busily engaged all the past season sinking a shaft on their property in Creighton township, a few miles west of Sudbury, and are still

at work. The vein matter is quartz and slate, with some iron pyrites. It carries no visible gold, but assays show from \$12 to \$20 per ton. The shaft has now a depth of 180 feet. A Crawford mill was put in last October, and it is the intention of the company to erect a stamp mill when the property is a little more developed.

Perhaps the most promising of all Ontario gold mines at the present time is the Ophir, situated in the township of Galbraith, about 18 miles north of the old Bruce copper mines. A large quartz vein occurs in diorite, and carries free gold in considerable quantities, some portions of the vein yielding very handsome specimens. The mine is the property of the Ophir Mining Company, of Chicago, which purchased it from McArthur Brothers, of Toronto, for \$100,000. The capital stock has been placed at \$3,000,000. Shafts have been sunk and adits driven both on the vein proper and on a large vein-like mass or chimney to the left, with good results. A 20 stamp mill has been put in, with all the requisite accessories, and a boiler and engine of sufficient power to admit of a large increase being made in the stamping capacity. An abundant supply of water for all purposes is found in a small lake on the northern side of the location. About 40 tons of ore are being treated per day of an average value of \$8 per ton, the cost of mining and milling being reported at \$2.58 per ton. The putting in of additional hoisting machinery, and of an electric plant for drilling, lighting, &c., is contemplated, as well as a chlorination process for treating the concentrates. The quantity of ore in sight is estimated as large.

A joint stock company has been organized in Rochester, N.Y., to work a mica mine on lots 12 and 13 in the Ninth concession of the township of Methuen, Peterborough County. Supplies are being sent in, buildings erected, &c. There are three or four veins on the location which appear to converge to a common point. The mica is said to be of the finest quality white, and the size of the crystals is such as to admit of pieces 6 inches by 6 inches being cut. Mr. J. B. McWilliams, of Peterborough, is interested in the property.

News comes of a discovery of tin ore in the Sudbury district, the variety and richness of whose mineral resources are only beginning to be known. Mr. W. Thomas Newman, of Toronto, received from a Sudbury miner specimens of the ore which were stated to have been taken from a quartz ledge standing out boldly, several feet in width. The samples consisted of several pieces of soft, clear quartz, fairly filled with pellets of mineral from the size of grains up to that of a small bean, the mineral constituting, perhaps, 20 or 30 per cent. of the vein matter. The crystals, or rather fragments, conformed in specific gravity and other physical characteristics to cassiterite, or tin oxide, which further assay proved them beyond doubt to be. Tin has not hitherto found an authenticated place on the list of Ontario minerals, and if the discovery be confirmed, and the ore found in quantity, a very important addition will be made to the mineral wealth of the province.

Some trial shipments of iron ore have recently been made from mines on the Kingston and Pembroke Railway to McDougall's blast furnaces at Radnor Forges, Quebec, to mix with the bog ore now principally used there. Charcoal from the Rathbun Company's works has also been shipped to the same place. That firm, however, markets most of its charcoal product at the charcoal iron furnaces of Detroit, Mich.

The deposits of barytes on McKellar's Island, Lake Superior, are about to be worked by a company organized for that purpose. The mineral occurs there of high quality and without much admixture of impurities. It is the intention to put in machinery which will raise about 75 tons per day, and the output will be shipped to the United States for further treatment.

MINE EXPLOSIONS GENERATED BY GRAHAMITE.—In a paper read before the American Institute of Mining Engineers recently, Mr. William Glenn drew attention to a somewhat novel cause of colliery explosions. The Ritchie Grahamite Mines of Ritchie County, West Virginia, are situated near the central part of the upper barren coal measures of the Appalachian coal field. The rocks of the region are shales and sandstones, which lie almost horizontal. They show no evidence whatever of containing carbonaceous ingredients, except that they enclose, at long intervals, thin veins of exceedingly impure coal. The vein of grahamite is a straight and vertical fissure, which cuts downward across the horizontal strata of the rocks mentioned. Quite recently two explosions occurred in the mine, after shots had been fired, which could not be traced to gas, and which were clearly due to the ignition of fine dust.

DIAMONDS IN AUSTRALIA.

By ALBERT F. CALVERT, F.R.G.S.

OWING to the number of reports that are at present being published, as to the existence of the diamonds of Australia, a few words as to the fact may be of interest to your readers.

Referring to Mr. John Calvert's explorations in Australia in the early days, I am enabled to state that the diamonds of Australia owe their origin to three different sources. The oldest from the crystallization of carboniferous matter between the diorite or greenstone dykes, and the quartzose reefs. This would take place near the surface, and would, mostly, be long since denuded by the floods and rainfalls, being mixed with the detritus which has been washed down and accumulated from the higher lands. The second would be the overlapping of the basalts over the accumulations, formed by ancient river beds, and the heat of the basalts would be sufficient to make the conglomerates in which the diamond has been found, in many different parts of the world, more especially in India and Brazil. The last condition would be the extinction of some active volcano, the dying struggles of which would draw portions of the surrounding country into the vortex of the crater. The molten matter would then be partially thrown out, and, again and again being filled in, would at last settle down. The actual combustion ceasing, the fire would die out, and a fresh set of circumstances set up. We should then have a huge basin filled with conglomerates, shales, and schists, partially converted into clays more or less sprinkled with fragments of rocks of the surrounding country.

Now, the centre of this accumulated debris would be of a lower temperature than the walls of the basin, which would retain their heat for some time. The hydro-carbons, which previously had been consumed, would now permeate throughout, and under pressure, together with the currents set up, the carbons would crystallise, and veritable diamonds would be the result. In Mr. John Calvert's field books he has several localities of diamondiferous conglomerates laid down, some accompanied by sketches of the districts. From his, and my own investigations, I consider Western and South Australia will give the richest and most productive mines, whereas Victoria, New South Wales, and Queensland will come next in richness. The Bingara Diamond Fields belong to the second class—viz., the overlapping of the detritus of the ancient river (most likely the Horton) by the basalt. A portion has been denuded, leaving the diamonds in some spots practically on the surface, or within a few inches. This ancient detritus is composed of pebbles, white quartz, jasper, chalcedony, fragments of Devonian sandstones and upper Silurian shales, associated with rounded masses of corundum, sapphire and black tourmaline, also occasional zircons, and very rarely, rubies and other precious stones; also magnetic iron with occasionally scales of gold adhering, and silicified fragments of various woods. These are occasionally interstratified with sand, and here and there beds of pipe-clay, and where the basalts have been most active patches of silicious or ferruginous conglomerate. Notwithstanding this tempting bill of fare I should recommend it with great caution to the speculating public, as, although the diamonds are indisputably there, yet there are many drawbacks and obstacles to encounter before the dividend would reach the pockets of the ever-confident shareholder. If he wants a veritable paying Australian diamond mine, let there selected one of the pipes of the ancient craters, where the diamondiferous debris would be more largely impregnated with the glittering gem, and where the area of nature's operations is more concentrated.

STEAM DRILLS IN THE BENGAL COAL FIELD.—We are glad to learn that another drill—making three in all—has been imported into this coal area. The new drill is of the "diamond" pattern, and appears to elicit praise on all sides. It is at work on the B. C. Co.'s property in Raniganj.—*Indian Engineering.*

DEAFNESS AND NOISES IN THE HEAD cured at the patient's home. This Illustrated Edition also treats on the cure of Catarrh, Bronchitis, Asthma, Extreme Stoutness, Indigestion, Dyspepsia, Rheumatism, by Medico-Electricity.—4d. G. B. BARNETT, Publisher, 8, Tavistock Place, London, W.C.—[ADV.]

THE MINERAL WEALTH OF HUELVA.

Being an Illustrated Article on the History of this District from the earliest times.

[Specially written for *The Mining Journal*.]

VII.

(Continued from page 293).

A glance at the map of Spain will show that it would be difficult at the present day, with all our geographical methods, to describe the site occupied by the mining district of Huelva in a more accurate manner than is here done by this writer of antiquity. In fact, he not only sketches out the whole district, but he even tells us that it produces copper. It will be remembered that Strabo saw the commencement of the Christian era, and, as he states positively that the mines were productive at the very time he wrote, it is clear that work must have been going on there some time previous to this date.

The earliest evidence of actual Roman residence in the locality is obtained from the coins. These indicated no occupation until the very last years of the Republic or the commencement of the Empire. Some of those which have been found in Rio Tinto were coined about this time in Rome, so they do not necessarily indicate an occupation at that period, as they might not have been introduced until years afterwards. Others, however, were struck in Seville, and they must be admitted as settling this date in a definite manner. More especially is this the case with one bearing the effigy and name of the wife of Augustus, the first Roman Emperor.

From this time forward, by means of the coins found in the districts, we can follow almost consecutively the Roman exploitation of the Huelva region through the reigns of the various Emperors, making it, in fact, contemporaneous with the Roman occupation of the Iberian Peninsula.

Indeed, we can trace it by means of those pieces of money through such reigns as those of Augustus, Claudius, Nero, Vespasian, Trajan, the Antonines, Gallienus, Aurelian, Constantine, Gratian, and Theodosius, down to the ill-starred times of Honorius, when the Barbarians presented themselves before the Imperial City, thundering at its gates and enforcing the sudden abandonment of all colonies. Spain was thus left unprotected from other hordes, who, directing their steps across the Pyrenees, soon overran it.

These coins referred to are not only found on the surface of the ground, but are met with in the hearts of and disseminated through the gigantic slag-heaps already mentioned whenever these are cut into; thus showing that they were left there whilst these were being formed, and they have been found in incredible numbers. Scarcely can a foundation be opened, a tramroad cutting started, or, in fact, an excavation of any sort made in the neighbourhood of a mine in Huelva without supplying some sample of a Roman coin, and most assuredly people were less careful of their money in those olden times than we are nowadays.

Other vestiges of the Roman occupation consist of the foundations of houses (whole streets in some instances), mosaics, cemeteries, carefully dressed stones, pottery, glass-ware, and metal tablets on the surface; whilst underground in the mines themselves lamps, many bearing the name of the maker or owner, picks, hammers, wedges, timber (sometimes carved by the slave-workers with their names and initials), wooden water channels, water-wheels, and Archimedian screws are found in greater or less profusion where the old workings occur. To describe all these remnants, or to endeavour to fix their precise age, would be impossible, and is unnecessary. A few, however, being of a most interesting nature, are worthy of a short notice; but before proceeding to mention them in detail it will be well to explain in a few words the system of management adopted by the Romans in their Spanish mines.

The labour was supplied by three classes of the population—slaves, criminals, and ordinary citizens. The slaves and criminals, once inside a mine, seldom came out, consequently the want of light and fresh air soon so enfeebled their bodies that hard work could not be supported, and death shortly ensued. The foremen over these miserable wretches were citizens or freedmen, and we are told that they did not spare the lash from the shoulders of their less fortunate brethren, who, being chained, could not resist even though they would. Near the well-known lead mines of Linares a rough bas-relief has been found, depicting a gang of enchained miners marching in front of a foreman. A sample of an iron leg-shackle found in a cemetery was shown by the Rio Tinto Company in the Madrid Mining Exhibition of 1885. The significance of these shackles, mixed up with human bones in an ancient grave, is manifest. In the time of the Republic these mines, which were private property, paid a tax to the State, whilst those which belonged to the State itself, or had been confiscated to it, were let out on yearly royalties.

The gathering of these dues was let by auction to the Publicans, and these formed themselves into syndicates, having offices, employees, and a cash system, organised very much as a company of the present day. The abuses and injustices enacted by these societies soon became intolerable, and Livy tells us that, where a Publican interfered, neither public right nor private liberty was respected.

When the mines were worked on account of the State, mechanics, skilled in the special appliances used, an official valuer, and a works "manager," formed part of the staff of management. Over all these was a Procurator, who sometimes superintended a district containing several small mines, whilst at other times he was entrusted with only one, if of sufficient importance. Dedicatory inscriptions, found in various parts of the Roman Empire, tend to show that the procurators received their appointments direct from the Emperors; and to this arrangement the district with which we deal seems to have been no exception, as will be seen later on. The chief duty of a Procurator was to see that the property or zone under his charge supplied its proper quota to the Imperial Treasury.

Four Vestiges of Roman Occupation.

We will now proceed to give a concise description of four vestiges of the Roman occupation of the mines of Huelva, which are of more than usual interest. They are:—

- The methods used for draining the mines.
- The Seville stone.
- The Rio Tinto tablet.
- The aljuzet tablet.

(a) *Methods used for Draining the Mines.*—Adit levels were principally used for unwatering the mines. It will be recollected that the ancients, being ignorant of the magnetic needle, had no means of finding a direction underground, and were obliged in consequence to sink many shafts to the proper depth from the surface along the line there selected for the adit. In the Huelva mines these shafts are seldom more than 20 or 30 yards apart, and it is evident that in a fairly hilly country the work of opening the gallery joining their bottoms will represent much less labour than the execution of the shafts themselves. This ac-

counts for the adits not being taken straight, but being carried under the lowest parts of the valleys, even when these did not go direct towards the lode which was being sought. Those who have had the privilege to superintend the reopening of these old adits have invariably been struck by the evident difficulty with which the direction was kept from one shaft to another; indeed, it is quite clear that the Romans were very weak in the matter of tracing underground alignments.

The dimensions of the galleries vary exceedingly, but they are usually of only sufficient size to allow the passage of a man crawling in a stooping position. In some cases, a limit in depth was reached at which these adits became inexpedient, and then resort was had to mechanical means for draining to lower depths.

In Fig. 2 is depicted one of three archimedian screws found in a mine called "La Coronada." A similar one is in the possession of the owner of that mine, Mons. Daguerne-Dorpietal, of Seville. The three already mentioned were discovered in such a position as to make it evident that a succession of them had existed, raising the water from one to the other. We have already drawn attention to the reference made by Posidonius to the use of archimedian screws in the district, and the actual finding of them, nearly 2000 years after their mention by that ancient writer, is a most marvellous instance of historical corroboration.

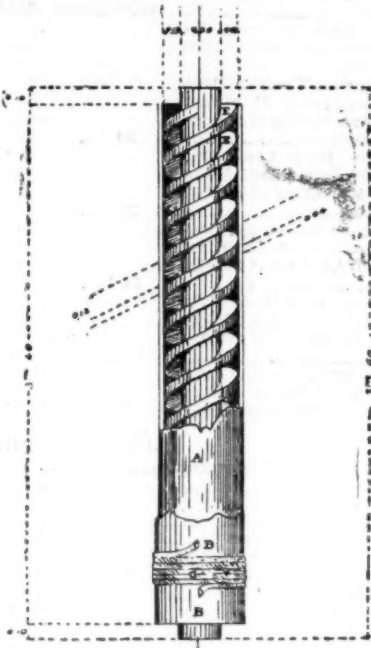


FIG. 2.—AN ARCHIMEDIAN SCREW.

From the description given on Fig. 2 of the materials used in the making of the screws, it will be manifest to those acquainted with the corrosive nature of the waters to be dealt with, that they had not been affected by contact with them. Scoop wheels, however, seem to have been the most usual means adopted for mechanical drainage, and they have been found at Santo Domingo, Tharsis, and Rio Tinto of almost identical design. They are made of timber fixed to bronze axes, and were thus able to resist the corrosive action of the mine waters. They were usually, perhaps always, set up in pairs, and were, no doubt, actuated by slaves in the style of a treadmill.

Fig. 3 is a sketch of a pair of these wheels as discovered in the Rio Tinto Mines, whilst Fig. 4 shows a set of them made to lift the water step by step, and is, in fact, a representation of part of what was once opened up in the Tharsis Mines, where an installation of no fewer than 14 was found to have existed. The wheel, which is shown as entire on Fig. 3, is deposited in the British Museum. Nothing about these wheels or screws indi-

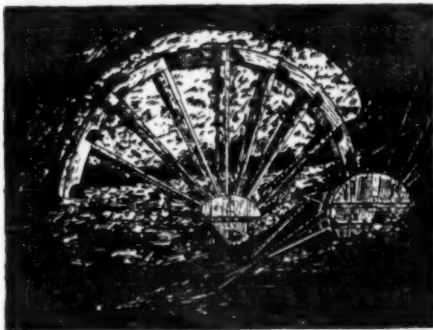


FIG. 3.—ROMAN WATER WHEELS.

cates the exact period in which they were made; but it may be assumed that they belong to the very latest period of the Roman occupation, as they were, no doubt, in use when the sudden abandonment of the mines took place; with one exception no date can be fixed for the adit levels. The exception is one at

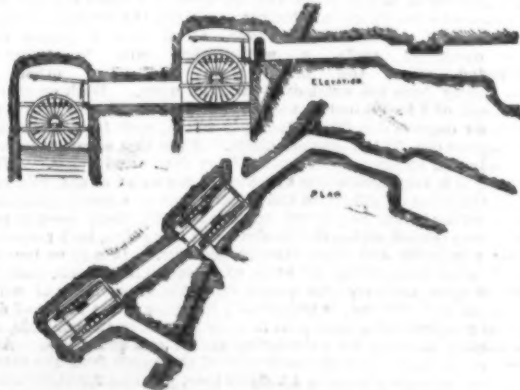


FIG. 4.—SET OF ROMAN WHEELS.

the Rio Tinto Mines, where a copper tablet found in it, and afterwards mentioned, shows that it was commenced before the end of the first century of the Christian era.

(To be continued.)

SPECIAL CORRESPONDENCE: COLONIAL AND FOREIGN. MINING IN SPAIN (ASTURIAS).

THE DEVONIAN FORMATION.

(FROM OUR OWN CORRESPONDENT).

GIJON, 17th March, 1894.

THIS forms a curved zone from north to south throughout the province, and continues into the province of Leon on the south, having an average width of about 16 miles. The lower and upper series are well represented, and middle or Eifel system is well in view, indicated by the red and grey coral limestones.

On the coast, the Devonian is first met at Farado, and continues eastward to Cape Torres, on the west of Gijon Bay, interrupted at Arnao by a patch of carboniferous, and at Cape Penas by a Silurian anticline.

The strata may be divided into the following beds:—

(a) Old Red Sandstone and conglomerates, alternating with shale and green quartzite. When these are in thick banks they appear banded in alternate white and red beds, the red ones being well charged with iron oxide, which in some instances form thick banks of granular iron ore that are being worked to supply local works.

(b) A bed of grey sandstone, a true grauwaacke, in several varieties, forming thick banks in some places; in others where it thins down, it is worked for building stones. . . . (a) is 325 feet thick. . . . (b) has a thickness of 1625 feet.

(c) Dark grey slaty beds of uniform texture, never met with in workable conditions. These are generally lustrous and brittle, having interlying beds of red sandstone and limestone. Their thickness is about 1000 feet.

(d) The marly beds of the series are important, as they comprise a fifth of the zone. These in some places have interlying beds of a red limestone, well charged with coral fossils. When this limestone is absent these beds have a close resemblance to the Keuper marls of the Trias. Their decomposition leave a rich productive soil. Limestone of the series of a light ashy colour, and at times blue, with interlying beds of marl and clay slate, are abundant, forming regular banks of marble, excellent for architectural purposes; also beds of dark red limestone, heavily charged with fossils. The greatest recognised thickness (d) is 7900 feet.

Without specifying, in a detailed form, the component parts of each of these beds, as they are presented along the coast, between the places above mentioned, it may be well to add that they are well fossilised.

Dr. Charles Barrois, in his *Recherches sur les terrains anciens des Asturies et de la Galicie*, published in Lille, 1882, classifies them as follows:—

Class.	Known Species.	New Species.
Coral	46	and 7.
Crinoides	14	" none.
Bryozoaires	10	" 1
Brachiopodes	67	" 7
Lamellibranchiata	3	" 1
Gasteropodes	7	" 3
Cephalopodes	3	" none.
Pteropodes	3	" "
Annelida	1	" "
Trilobites	2	" "

The Arnao carboniferous appears to be anomalous at first sight, as it passes under the Devonian on the west, being overlaid by a bed of Devonian limestone 16 feet thick, heavily charged with fenestella, fragments of crinoides, and other species typical of the series. On examination it is seen that the abnormal position is due to a fold from the west. A section across this carboniferous, until it again overlies the same bed of limestone (from whence easterly it has been denuded), is as follows:—

	Feet.	Inches.
Coarse grey sandstone with calamites	6	6
Dark iron anthracitic shales	8	6
Sandstone and siliceous conglomerate	4	0
Coaly shale with calamites	4	0
Siliceous conglomerate	2	6
Coal having pyrites	2	0
Sandstone	1	0
Black carbonaceous shale	3	6
Sandstone and conglomerate	2	6
Carbonaceous shale	3	6
Ferruginous shale	5	0
Gray compact shale with large nodules of ferruginous limestone at the base	3	6

The Arnao Zinc Works are situated here. These are owned by the Real Asturiana Company, who bring their ore from their calamine mines in the Picos de Europa. The works are thoroughly fitted for distilling, reducing, and working up the product into its different marketable forms. It is a model works of its kind, and has every adjunct necessary for the material and moral welfare of its workmen and their families. That the coal has been pinched in the coast outcrop is proved by the fact that the company work out the fuel they require from a little distance inland, by shaft from a thick seam, that gives off a good deal of gas. They have carried their workings northwards, and are working some distance under the sea, and, like the Botallack Mine on the Cornish coast, the roar of the ocean is the music accompanying the workman's pick. This is the only instance in the province of deep working in coal, as all the mines in the extensive carboniferous basin, which will be described in a future paper, are still taking out the coal above the water line by gallery. About three miles to the east of this, the Felguera Iron and Steel Company take out ironstone from a thick bed of this, that crops on the coast, and continues inland for a long distance. It is stratified conformably in a flaggy form, and breaks up in rhombohedral form. It is hydrous, and has a percentage of 48 iron, with 16 to 18 of silica. The presence of spirifer and crinoides proves its marine origin, and accounts for the phosphorous with which it is contaminated. The cost of quarrying and freight from the spot of Gijon is, however, exceedingly low, and when mixed with ores from Bilbao and Santander smelts well, and yields a good iron. The disappearance of the phosphorous, or the greater part of it in the blast furnace, is probably owing to the fact that the limestone flux employed contains a good percentage of magnesia.

Plutonic Masses.—To the south of Salas there are two small masses of granite. South of these, at Carles, there is a dyke of diorite, which crosses the River Narcea, having abundant mispickel, and a vein of chalcopryite of about a foot in thickness. This was worked several years ago with poor results, owing to the hardness of the enclosing rock. Accompanying this dyke there is a bed of grauwaacke containing small perfect crystals of magnetite, and this bed is

followed by one of white marble, too hard for statuary purposes. Following the dyke southwards, on the opposite side of the river, there is a small deposit of copper scoria from an ancient work. Coins found on the spot with the bust of Constantine indicate the approximate period when this was worked.

The diorite continues in a southerly direction for a distance of 7 miles, through the Sierra de Bejaga, where there are several ancient workings for copper. Here also coins of Constantine have been found. The immense banks of attle, to-day overgrown with rich vegetation and timber, prove their extent. Work was started some five years ago on one of these mines upon a strong colouring of copper carbonate, cropping from the encasing rocks, but with poor results, as this was followed on by gallery; and a small attempt at a shaft in it, following it down several metres, showed the continuance of the carbonates, with nodules of pyrites, these yielding about 14 per cent. copper. The owner was recommended to stop the gallery and continue the shaft below the carbonate zone, but funds or energy failed at sight of the necessary outlay for pump and winding engine, and he has suspended work till better times.

Going north from Carles to Abaneda, we meet the largest of the two masses of granite mentioned above. Near this there is an immense ancient working. Shulz says—"It was in all probability worked for gold, although it might also have been worked for tin, as an isolated specimen of this has been found."

The working consists of a vast surface cutting. Water was brought to it by channels at three different heights. The mill where this working exists is formed of altered grauwacke and Old Red Sandstone, and in the vicinity there is a course of quartzite. About 15 miles to the south-east of this there is a more recently worked copper mine, in the contact of the carboniferous limestone with the Devonian shale.

In the district of Cangas de Tineo there are several veins of clean antimony sulphide. Mines have been located on these, and some of them partially opened, but in all of them workings are now suspended. The lodes vary in thickness from a couple of inches to over a foot, and are nearly vertical, crossing the formation of silurian grey slate. These veins crop to the surface, and all the work done in them has simply been to take out the stuff where it appeared on the surface, without any system in the working, until holes were made, which, after rainy weather (very frequent in that district), required a lot of bailing to empty. This is the reason why they are to-day stopped.

The cutting, bagging, and transport of this ore to Gijon cost, at the exchange of 30 pesetas to the pound, £6 13s. 4d. per ton, and freight to England 12s. per ton.

The assay of parcels shipped to England from these lodes and sold there yielded 68 per cent. silver-blende, and it is free from arsenic, lead, and copper. It is rather unfortunate that the small capital outlay for working these mines in the right way has not been found.

OUR WEST AUSTRALIAN LETTER.

The Exemptions.—More Sensational Finds.—Australian Diamonds.—Nineteen Ounces to the Ton.—An Underground Jeweller.

(FROM OUR OWN CORRESPONDENT.)

PERTH, FEBRUARY 16.

THE terrible water difficulty still faces us here, and, indeed, is daily becoming more alarming, as it is recalled to mind that there have been years—three in succession—when no rain to speak of has fallen, even in winter, in the country around Coolgardie. The rushes to Yilgarn and the Murchison are beginning, hundreds of men insisting on plodding their weary way to the fields in spite of the reiterated warnings of the Government and the Press, and the gravest fears are entertained that we may be on the eve of one of the most stupendous catastrophes which even thirsty Western Australia has ever witnessed. Up to the present, everybody has felt that March, at any rate, will come in with the usual thunderstorms, filling the wells with the indispensable fluid from Heaven, and saving the multitudes which no persuasion can keep from pressing onwards; but now, alas, as February is fast passing, and the barometer remains at its abnormal height, we are told that even April has been known to come and go without the opening of the celestial windows, after just such exceptionally hot summers as the one we are now experiencing. With such an anxious look-out it was in most quarters thought a general extension of the labour exemptions for, say, a couple of months, would have been granted, but the Government has not seen its way to grant the boon. Each case is taken by the Wardens of the different fields on its own merits, with the result that on the Yilgarn only the leaseholders far away from the townships, at places where water is not to be had at any price, have obtained the coveted release. On the Dundas a pretty general two month holiday has been granted, and, as may be imagined, there is much grumbling on the other fields in consequence.

At Coolgardie there is a general belief that somewhere, about 100 miles from Bayley's, a find has been made of such a sensational character that Government is in league with the lucky prospectors in keeping the secret of its whereabouts for fear of the consequences of a rush in the present waterless condition of the road to it. The "specimens," which have been seen by many, are said to be such as to quite eclipse the famous "plum-pudding stone" of Ford and Bayley.

The yields at Bayley's and the No. 1 south are even better the deeper the miners get, and the same may be said of the more famous leases on the Murchison.

Truly, we Western Australians cannot be accused of being too enterprising. Just now a good deal of interest is being taken in the fact that precious stones have been again found with the tin shipped from the neighbourhood of the Shaw to Singapore; but it will be safe to wager that no steps will be taken to systematically search for them, as the Singapore experts so strongly advise. These chance discoveries are by no means new. I distinctly remember reading some couple of years ago, in the *Pall Mall Gazette*, an interesting detailed account of the finding of diamond, tourmaline, and sapphires, and, I think, rubies too, by Mr. Albert Calvert, the explorer, somewhere near where the tin for Singapore was taken from. I also think a lease of certain grounds was granted by the Government to a firm whose name I cannot recall, in order that a proper search should be made, but nothing very noticeable was ever done, or it would by this time have become a matter of history. No; it is all gold now, and not even the sparkling diamond can induce us to withdraw our hungry gaze from that wonderful shaft called Bayley's, where, if report speaks truly, there is rapidly accumulating another "trophy," which is to quite throw the four former ones into the shade.

The most recent crushings from Marble Bar are what may be termed solidly satisfactory. No sensational results of 8 or 10 ounces to the pound, but a steady persistent return of 1 ounce, 1½ ounce, and 2 ounces to the ton, with an illimitable quantity of rock of the same sort as that operated upon awaiting treatment.

RAND MINES, LIMITED.

THE GENERAL MANAGER'S REPORT.—AN IMPORTANT DOCUMENT.—PREGNANT SUGGESTIONS.

THE report of Mr. H. C. PERKINS, the general manager of the Rand Mines (Limited), is a document so important and interesting; is so full of pregnant suggestion; and has stirred the hearts of so many in South Africa, that we need not apologise for giving it in full.

"I beg" says "to submit the following report upon the operations of your company from the date of its incorporation, 22nd February, 1893, to the 31st December, 1893. Briefly stated, the company's financial income and outgo has been as follows:—

RECEIPTS.	
From issue 332,708 shares fully paid.....	£332,708 0 0
" sale of mining ground	30,172 19 7
" rents and revenue	955 17 6
" loans and unpaid accounts	169,638 14 9
	£533,485 11 10

EXPENDITURE.	
For mining ground—viz., 12 water-rights and.....	1357'8 claims £138,271 16 8
" 650,713 shares in companies with total issue of 1,030,000 shares—viz.:—	
Wemmer, Ferreira, Worcester Deep Level Co., owning 31 claims, Rand Mines holding 87,215 out of 90,000 shares.....	30 "
Henry Nourse Deep Level Co., owning 29 claims, Rand Mines holding 108,263 out of 125,000 shares.....	25'1 "
South Rand Gold Mining Co., owning 155 claims, Rand Mines holding 194,150 out of 300,000 shares.....	73'6 "
Rand Deep Level Gold Mining Co., owning 191 claims, Rand Mines holding 142,500 out of 250,000 shares.....	148'2 "
Geldenhuis Deep, owning 211 claims, Rand Mines holding 118,585 out of 265,000 shares.....	94'3 "
	279,274 2 7
	1'729 claims £417,545 19 3
For Mooifontein Farm, 122 acres	10,782 0 8
" Town property	2,175 4 0
" Expenses, viz.—Preliminary expenses.....	£12,256 15 1
Interest	8,088 19 9
Office expenses, salaries, &c.	5,398 16 4
	25,742 11 2

Total cost of properties to 31st December.....	£456,247 15 1
ASSETS.	
Advances to Henry Nourse Deep Co.	£3,670 2 8
" for development south H. Nourse ground ..	35,702 12 4
" on account of machinery ..	18,682 3 0
Office furniture, &c.	692 5 10
	£58,747 3 10
Bills receivable ..	£15,000 0 0
Sundry debts ..	2,583 1 1
Cash in bank ..	907 11 10
	18,490 12 11
	77,237 16 9
	£533,485 11 10

Hy. Nourse Deep ...	1	1025	1400	335	295	191	148'3
South Hy. Nourse...	2	800	900	583½	547½	240	240'0
Geldenhuis Deep ...	2	583	900	583	431	211	94'3
Rose Deep.....	2	750	700	42	28	133	57'6
		3958	3900	1918	1301½	804	565'3
		3900	—	1301½	—	—	—
Total		7858	—	3219½	—	—	—
Completed		3219½	—	—	—	—	—
Uncompleted		4638½	—	—	—	—	—

The shares and properties are all entered at cost prices. A valuation at present saleable value would show a large profit. With the exception of 95 claims which are under the Rodepoort and Star Companies, all of the 1729 claims owned by the Rand Mines are on the dip of the reefs of the companies operating upon the Witwatersrand Main Banket Reef series, between the limits of the Langlaagte United Company on the west, and the May Consolidated Company on the east, a distance of 10 miles, covering the richest portion of this extraordinary reef formation, some 40 miles of which is in process of development.

The nearest of the company's claims lie within about 300 feet of the outcrop; the most distant are some 6000 feet away. Development by shafts and boreholes has demonstrated the dip of the banket beds sufficiently to enable us to estimate with great confidence that all of the company's mining ground is within a practical working depth, with the exception of, perhaps, 150 claims, which may or may not lie too deep to be profitably worked. The dip of the reefs at the outcrop varies from almost vertical to almost flat. Usually it is nearer the vertical, flattening with depth. The average dip of the reefs in the ground of the outcrop companies I estimate at 40 degrees or more from the horizontal, while in the Rand Mines ground I judge it is 30 degrees. The superficial area of one claim is 83,552 square feet, where the slope is 40 degrees, and 71,387 square feet, where the slope is 30 degrees. Although the main reef series comprises many parallel beds of banket, they are not all sufficiently rich to pay for working. At present generally two of the beds are worked, in some places three, and occasionally but one. The reefs range in thickness from a few inches to over 10 feet; the thinnest are worked to a thickness of 30 inches, while others are taken out in places for a width of 10 feet or more. I have not the data necessary to enable me to calculate accurately the average thickness extracted. I estimate it, however, at 5 feet 6 inches from the combined reefs, a width that will be materially exceeded when the large main reef and others of the poorer beds are extensively worked upon. With an average thickness of 5 feet 6 inches, the yield of ore would be—from a reef with 40 degrees dip, 36,348 tons per claim, and from a reef with 30 degrees dip, 30,195 tons per claim. From this aggregate should be deducted 10 per cent. for losses from faults and dykes. While usually it is very misleading to estimate the value of one gold mine from the value of others, in the present case this can be rationally done, owing to the very great extent to which these banket reefs have been proved within the district under discussion, both respecting their continuity and their average richness. It is to be borne in mind, when considering the value of these mining claims, that they are not upon ordinary gold quartz veins, the eccentricity of which, in extent and richness, is proverbial; but they cover layers of auriferous conglomerate, analogous in their formation to coal beds, and as reliable as those for calculating extent and quantities. As to their richness, we have the assurance of the result from the extraction and reduction of some 4,300,000 tons, yielding 2,920,000 ounces gold, taken by 26 companies from an almost unbroken extent of 10 miles in length, and from depths varying from surface to 600 feet; in addition, boreholes have proven the continuance of the deposits as far as a depth of 2400 feet.

The following facts respecting the outcrop properties now being worked immediately above the Rand Mines claims are important as indications of the value of your property. The 26 parent companies

whose claims lie above us own upon the outcrop and dip of the reef some 976 claims. They are operating with about 1370 stamps, and last year crushed 1,411,000 tons of ore, which yielded 922,047 ounces of gold, of a value of about £3,227,000. These companies are capitalised at £5,967,723, and their shares, at present market value, are worth £12,000,000. During the year 1893, 16 of these companies paid dividends aggregating £854,209—over 14 per cent. on the capital of all of the above-mentioned 26 companies, and over 7 per cent. on the present value of all the shares. The average cost of working per ton, arrived at by deducting from the gross yield of last year the dividends actually paid, was 33s. 6d.; the yield was 45s. 6d. Out of 26 companies 16 paid dividends. Although a portion of the other 10 may have had a loss, several of the dividend payers fairly earned considerably beyond the dividends actually paid. I believe the above calculation shows the actual cost and earnings very closely for the past year. The average profit from working the present class of ore I am satisfied can be increased to 20s. per ton. Although it seems reasonable to expect the expenses of mining to increase with depth, it is found by experience that the disadvantages connected with this factor are more than offset by the gains accruing from improvements in equipment and methods, and from the increasing experience of the workmen. It is a well-established fact, amply confirmed by experience upon the Rand, that the cost of a well worked mine diminishes each year. Certainly, there is a limit to this reduction in costs; but the limit is not yet reached upon the Rand, and it can be confidently expected that the average working cost will become lower each year for some time to come.

The yield of ores from the area under consideration has been:—From 1887 to 1889, 401,112 tons milled, average 17½ dwts. per ton; in 1890, 503,193 tons, average 14½ dwts.; in 1891, 763,210 tons, average 13½ dwts.; in 1892, 1,201,855 tons, average 13 dwts.; in 1893, 1,411,710 tons, average 13 dwts. During the first three years the quantity treated was small, and only the richest ore was extracted, giving 17½ dwts. per ton; then followed two years of more regular working, when there was less opportunity for selection of ore, and the average yield fell to 13½ dwts. per ton, decreasing with an increasing output. In 1892 and 1893, although the tonnage has been largely increased, the yield has fallen but little, owing in a small extent to the yield from reserves of tailings. In 1893 the tailings gave 188,500 ounces out of a total of 922,047 ounces. As there were 1,411,000 tons of ore milled, the yield from tailings was 2'6 dwts. per ton of ore crushed, an amount, I estimate, but little in excess of the normal yield of the tailings from the above tonnage. As to whether the reefs become richer or poorer with depth, I am of the opinion that there has been no change down to the depth attained at present. Assays from cores from the deepest boreholes (one going to a depth of 2400 feet) have been highly encouraging. I do not, however, attach much weight to the results obtained from the limited areas tested by this means.

The Rand Mines, in connection with other companies, is now engaged in the development of the following claims:—

	No. of shafts.	Estimated depth to reef.		Depth completed on Dec. 31, 1893.		Total No. of claims.	Proportion of Ore Won by Rand Mines (Limited.)
		No. 1. Ft.	No. 2. Ft.	No. 1. Ft.	No. 2. Ft.		
Rand Deep.....	2	1025	1400	335	295	191	148'3
Hy. Nourse Deep ...	1	800	—	374½	—	29	25'1
South Hy. Nourse...	2	800	900	583½	547½	240	240'0
Geldenhuis Deep ...	2	583	900	583	431	211	94'3
Rose Deep.....	2	750	700	42	28	133	57'6
		3958	3900	1918	1301½	804	565'3
		3900	—	1301½	—	—	—
Total		7858	—	3219½	—	—	—
Completed		3219½	—	—	—	—	—
Uncompleted		4638½	—	—	—	—	—

At the expected rate of progress all the shafts, excepting the Rand Deep No. 2, will reach the reef this year or early in 1895. Allowing 18 months' time after the reefs are struck for development work, these properties, covering 804 claims, should be in a condition to keep 600 stamps, with a crushing capacity of 1,000,000 tons per annum, steadily at work early in the latter end of 1896. The Geldenhuis Deep property, it is expected, will be producing bullion a year earlier than this. No. 1 shaft upon that property having already reached the reef, development work is now in progress, with most gratifying results respecting the width and richness of the reef. To complete the shafts upon these properties, develop and equip the mine, and erect reduction works, will call for the expenditure of some £900,000 within the next two and a-half years. This sum will be chiefly raised by subsidiary companies. If the Rand Mines keeps its present holdings, its part of the burden will amount to some £560,000.

Besides the ground now in course of development and several detached lots, the company owns five other compact blocks, viz.:—Under Langlaagte Estate, 210 claims; under Ferreira, 7-12ths of 142 = 81'3 claims; under Spes Bona and George Goch, 160 claims; under Jompers, 210 claims; and under May Consolidated, 64 claims; or a total of 715'3 claims. The development of Blocks Nos. 1, 2, and 4 should be commenced as soon as practicable. I roughly estimate the three properties will require for development and equipment £750,000. Although the cost of development of these properties might be less in the future, when our organisation is improved, and the staff of workmen more efficient than at present, the loss by delay in rendering productive such valuable property is very great, and I strongly urge that the shafts be started at the earliest practicable moment. These banket reefs are already proved to an extent probably never paralleled in precious metal mining, and I see no good reason for timidity in undertaking their development on broad and thorough lines.

THE INSPECTION OF METALLIFEROUS MINES.—The Home Secretary, who was accompanied by Mr. Herbert Gladstone, received on Monday night at the House of Commons a deputation on the subject of the inspection of the metalliferous mines in Cumberland and North Lonsdale. The deputation consisted of Mr. W. S. Cairne, M.P., Mr. Ainsworth, M.P., Sir Wilfrid Lawson, M.P., and Mr. Daniel Marston, miners' agent for the metalliferous mines and quarries in the district.—Mr. Marston said there had been six accidents in the last six months from falls of roof, due to insufficient timbering. That particular class of accident caused more uneasiness and dissatisfaction than any other class of accident. These accidents were due to insufficient inspection.—Mr. Cairne said there was enough work in the metalliferous mines in Cumberland to find full employment for one man. There was no doubt that the Cumberland metalliferous mines were more difficult to watch and take care of than the general run of metalliferous mines. He should favour the appointment of a practical miner, if additions could be made to the inspectorate.—The Home Secretary, in reply, said he was going to bring in a Bill dealing with the whole law of metalliferous mines, which was so much in need of amendment. It was defective in a good many respects, and in particular for the provisions it made for the safety of the men, as compared with the Coal Mines Act. They proposed to bring all the quarries under the metalliferous mines inspectors. He proposed to increase the number of inspectors—indeed, he had got the consent of the Treasury to it—and that would enable him to add to the staff for the metalliferous mines inspection certainly by two, possibly by three, one of whom would be mainly concerned with quarries. If that were the case, it would afford him an opportunity of considering the claims of the Cumberland district, and seeing whether they could not put one of those gentlemen there. He was quite satisfied that they had made out a case for additional inspection, if the Government had the resources at their disposal.

MEETINGS OF MINING COMPANIES.

MYSORE GOLD MINING COMPANY, LIMITED.

An admirable year's work.—Decrease in the costs of working.

THE 14th ordinary general meeting of the Mysore Gold Mining Company (Limited) was held on Tuesday, at the Cannon-street Hotel, the chair being occupied by Sir CHARLES TENNANT.

The SECRETARY (Mr. I. Crocker) read the notice convening the meeting.

The CHAIRMAN said: The annual report and accounts which we are here to consider to-day were issued to you on the 10th inst., and I have no doubt they have all been carefully perused by you; and, therefore, I presume you will, as on former occasions, wish them taken as read, and allow me now to move their adoption. You will have gathered from our report, and from the able and interesting record for the year of Mr. Hancock, our superintendent on the mine, appended, that the operations have been carried on with great energy and success. The operations both underground and at surface have been largely extended, and but for the falling off in the yield of the ore during the latter portion of the year, a still better and more profitable financial result would have been obtained. It is to be regretted that the ore does fluctuate in value. Over this we have no control. We think, however, judging from our past experience of this mine, there is no cause for anxiety, as the record of the returns obtained from the commencement shows that there have been always considerable variations in the quality of the ore from year to year. The quantity of quartz stamped during the year was 49,822 tons, which produced 54,959 ounces of gold; the tailings treated amounted to 50,249 tons, and the gold obtained from the same 10,450 ounces; thus the total production of gold was 65,409 ounces, or 1018 ounces more than the previous year. The corresponding figures for 1892 were 44,548 tons of quartz, producing 55,393 ounces of gold, and 38,727 tons of tailings, producing 8998 ounces; total, 64,391 ounces. It will, therefore, be seen that the output was increased by 5274 tons of quartz, and that an additional amount of 11,522 tons of tailings were treated. The average yield of the ore passed through the stamps during the year was 1 ounce 2 dwts. 1 grain per ton, as against 1 ounce 4 dwts. 21 grains per ton in 1892, a difference of 2 dwts. 20 grains, whilst the average quality of the tailings treated was 4 dwts. 4 grains, as compared with 4 dwts. 15 grains in the previous year. The total yield of the ore and tailings combined was over 1 ounce 6 dwts. per ton, which is not unsatisfactory. In consequence of the decrease in the yield of the quartz the amount of the gold obtained direct from the stamps was 434 ounces less than in the previous year, notwithstanding the larger quantity mined. On the other hand, there was an increase of 1452 ounces derived from the tailings, on account of the additional quantity treated, the net result being, as before stated, an increase of 1018 ounces of gold. The amount realised by the sale of the gold was £254,311 8s. 8d., or an increase of £4979 14s. 7d., as compared with 1892; there were also receipts from other sources amounting to £237 11s. 3d.; therefore, the total revenue income was £254,549 0s. 11d. The expenditure on revenue account for the year was £117,531 9s. 8d., and the royalty on gold amounted to £12,580 8s. 9d.; these two items represent a total of £130,111 18s. 5d., which sum was charged against the income, leaving a profit on the year's working of £124,437 2s. 6d. To this amount was added the balance of £474 16s. 5d. brought forward from 1892, and the profit of £7642 7s. 1d. on the sale of our remaining Champion Reef shares, making a disposable sum of £132,554 6s. Out of this three dividends, amounting in all to 10s. per share, were paid, representing a total distribution amongst the shareholders for the year of £117,456 4s. 8d., and various items amounting in all to £14,155 18s. 11d., were written off the profits, leaving a balance to bring forward to the current year of £942 2s. 5d. With regard to the expenditure, although the total was £13,441 3s. 11d. in excess of that of 1892, on account of the additional quantity of quartz raised and milled, and tailings treated, I am sure you will all have been pleased to learn that the amount per ton again shows a material reduction, the comparison being £2 4s. 1d. as against £2 6s. 8d. in 1892, a reduction of 2s. 7d. per ton. This, of course, without reckoning expenditure at Schaw's shaft, which, as explained in our report, had been placed against revenue, whereas previously it was charged to capital. It may here also be mentioned that all the costs in connection with the sinking of Rowse's, Tennant's, Gilbert's, and McTaggart shafts, and extending the levels and crosscuts from the same, whether in barren ground or on the lode, have also been charged against revenue. The greater proportion of this might with propriety be considered unproductive expenditure. The total cost per ton, including Schaw's expenditure, was £2 7s. 2d. The cost per ton of quartz, omitting the tailings expenditure, was £1 19s. 6d. The milling and tailings costs were formerly shown together, but this time they are stated separately, and it will be observed the cost of treating the tailings now forms a considerable portion of the expenditure in consequence of the large quantity dealt with. It cost 7s. 7d. to treat each ton of tailings last year, which equals about 50 per cent. of the value of the gold extracted from the same; you will, therefore, see the working of this portion of our plant resulted in considerable profit. A great deal has recently been published regarding the heavy expenditure in connection with the working of mines on the Colar field. Undoubtedly it is heavy, as the quartz has all to be blasted and great rock-drill power, therefore, required, but you may rely upon it that we do our best to reduce it wherever practicable. The question is always before us, both on this side and in India, and we desire to assure you that every possible economy is being exercised. The item of fuel is a heavy one, being for last year about £40,000, and this is principally composed of coal sent out from England, it having been found, from exhaustive comparative tests, cheaper to do this than to purchase native coal or firewood. The average price per ton paid last year was £1 16s. 1d., delivered to the different departments, or 6d. per ton less than in the previous year. The coal strike, fortunately, did not affect this question materially, as we were supplied well ahead. You have already been informed that your directors have had a sample of the tailings tested by the MacArthur-Forrest process, and that the result led us to determine to make a trial on the mines upon an extended scale, so as to thoroughly test the practicability of treating the tailings more advantageously than at present. With this object, a plant capable of dealing with 2000 tons per month was shipped in January last, and we think it should be ready for work in about three or four months from the present time. Of course, this plant will be in addition to all the other appliances we already have for the extraction of the gold; therefore, when it goes to work, a good increase should be seen in the monthly returns. The expenditure on capital account during the year amounted to £21,213 12s. 7d., or £12,874 4s. less than in the previous year. The outlay includes the building of the large tank, additions to the machinery and plant—including air compressing machinery, boilers, rock drills, &c.—expenditure on new works, and the development of Glen section, Ribblesdale's shaft, Eastern prospect shaft, which is shown on the ground plan but not on the section, all of which may be looked upon as important places. All the machinery throughout has been kept in an efficient condition, and continuous mining and milling operations have been carried on throughout the year. Fortunately, we have had no anxiety in connection with the water supply, as there has been an abundance for all purposes, and with the large storage tank recently built, and the arrangements made for other supplies, no further difficulty is anticipated in connection with this important question. The health of the camp has also been exceedingly good throughout. A very large amount of work was accomplished in the mine. The number of feet of ground cut during the year by driving levels, putting up rises, sinking shafts and winzes, was 8348 feet 8 inches, whilst the ground excavated by

stopping amounted to 3135 fathoms 5 feet 6 inches. Important discoveries have been made in carrying out this work, and I think we are quite safe in saying the outlook for the future is altogether encouraging. I do not propose to enter further into the question of mining, as Mr. Taylor will deal with this in detail presently. There is one important point, however, to which I desire to draw your special attention, and that is the large quantity of ore laid open for stopping at December 31 last, viz., 74,936 tons, or 4010 tons in excess of the estimate made a year previous, notwithstanding the larger amount of extraction. This we regard as a most satisfactory feature, and you will, no doubt, be interested to know that the superintendent informs us the estimate is made upon a more conservative principle than heretofore. If he had adopted the system of the former estimates a considerably larger amount of reserves would be shown. We think this statement contradicts, in a very emphatic manner, the rumours that have been so freely and so unwarrantably circulated that our mine is worked out. Very good progress was made with the construction of the Government railway to the mines, and since December 11 last our coal has been delivered by this means. We have not yet been informed that the line is open for general traffic, but it is anticipated that it will shortly be. When all our goods are taken direct to the mine over the railway a considerable saving should be effected, and we hope that from this source the present year will derive considerable benefit. Our explosives contract terminated on December 31 last, and I am glad to inform you that after taking in tenders from all the manufacturers, as we do with all our important requirements, we have been able to arrange a new contract on terms which we think very favourable. The contract is for three years, and it is estimated there will be a saving to the company of £5000 or £6000 during that period. The explosives are delivered *ex* magazine on the field, the manufacturers undertaking to keep a sufficient supply on hand for all our purposes. We mention in our report that the administration expenses have been reduced, and that we anticipate a still further reduction for the current year. This department is now costing at the rate of about £4250 per annum, against £5200 in 1893. Before reading a telegram received from our superintendent, giving the latest information regarding the mine, I should like to say what I think you are all well aware of—that it is by our express instructions that these messages are sent for each general meeting, that you should thereby be placed in possession of the latest news. I will now read the message received from Hancock, March 19, 1894:—

1360 north of Rowse's, south of cross cut: Width of lode 1 foot; 3 ounces. Rise from 1360 north of Rowse's: Width of lode 2 feet 6 inches; 12 dwts. Rise 1260 south of Rowse's: Width of lode 3 feet; 2 ounces 10 dwts. per ton. Winze 620 north of Rowse's, north of cross cut: Width of lode 2 feet; 2 ounces. 235 north branch, eastern shaft: Width of lode 1 foot; 2 ounces 10 dwts. per ton. Tennant's: Width of lode 2 feet; 7 dwts. per ton. Rise 520 north: Width of lode 4 feet; 3 ounces. Winze 450 north of Schaw's north of cross cut: Width of lode 1 foot; 1 ounce 10 dwts. per ton.

Mr. Taylor will deal with the more important features of it. In conclusion, gentlemen, I look forward with confidence to the results of the current year, and to the future prospects of our mine. Sir Charles concluded by moving the adoption of the report and accounts. (Applause.)

Captain W. BELL McTAGGART seconded the motion.

Mr. JOHN TAYLOR said the amount of development of which he had to speak was, as the Chairman had said, very considerable; in fact, it was almost the same as for the previous 12 months, the actual distance of the development work performed in shafts and levels having been 8340 feet, or considerably more than 1½ mile in the hard quartz rock of the Colar field. This would show them very forcibly the immense advantage they were now gaining from the use of the rock drills, of which an average of 33 had been running during the year. Probably the shareholders would have noticed what to him was a very important fact—that of these 33 rock drills an average of 28 had been manipulated entirely by the natives. They would realise the importance of this when he told them that the native labourer only got paid somewhere about a shilling a day, while the cheapest European labour on the field, Italian labour, cost something like six or seven times that amount. Thus they would notice—and it was to him a very encouraging feature—that they were gradually becoming able to work the mine much cheaper by the instruction given to native labourers. (Applause.) Commencing at the north end of the property, Gilbert's shaft was sunk during the 12 months 119 feet, its total depth being now 681 feet. There was little to be said with regard to that because it was not in the payshoot, but north of Gilbert's shaft the 520 feet level had been driven 461 feet, the total to the boundary being 573 feet. For 260 feet of that drive the width of the reef was from 1½ foot up to 3½ feet, with an average value as high as 2 ounces. There was particularly noticeable the very considerable extent of stopping ground up to the 360 feet level. South of Gilbert's shaft the 320 feet level was driven in a payshoot about 100 feet long, and the average width of the reef had been 1 foot 8 inches, with an average of 1 ounce 17 dwts. Here also there was a considerable length of valuable stopping ground. On the south Tennant's shaft had been sunk during the year 87 feet, giving a total depth now of 531 feet. The reef there was only a little over 1 foot wide, and with an average assay value of about 12 dwts. Although, however, the reef was small the agents reported that it was of a promising appearance, and they anticipated its widening out in depth. That expectation had been realised. Since the report was written the shaft had been sunk further, and the reef had widened out to 3 feet. North of Tennant's shaft the bottom level—the 520 feet—was driven 179 feet, and the average width south of the reef had been about 3 feet 8 inches, and the average assay value about 9 dwts. That, of course, was not sufficient to please them very much, but they would doubtless have noticed—those who had followed the reports from the mine—that the ground above in the stopes had been both larger and richer than it was in the reef. The ground above—in fact, up to the 360 feet level—about 160 feet, would also give a very large quantity of stopping rock for the mill, and it was important to note in connection with this point that in one part of the cable which the Chairman had read—the part which stated that the rise was only up a very short distance—it was said that the reef was 4 feet wide, and giving an average assay value of 3 ounces. (Applause.) South again, the 290 feet level had been driven 250 feet during the year. It was thought that if they were on the reef at all there they were not on the best part of it. They came into a new chute 100 feet or more to the west of the main line of the reef on which they had been driving before. For 181 feet, driving back north from the new branch, the lode had averaged more than 1½ foot in width, and had assayed close on 1 ounce to the ton. In the stoping above this it was especially mentioned that the reef was 2 feet wide, and worth 2 ounces to the ton. This discovery was still, so to speak, in its infancy, and on that account he was not able to say much about it. They hoped, however, that it would satisfactorily develop. Rowse's shaft had been sunk during the year a distance of 211 feet, and it was now down 1446 feet. For some distance the reef was about 3½ feet wide in the payshoot, and the quartz was at rather a low value, so that it had become clear that the reef had folded away to the west, and that a cross cut must be driven in order to get into it again. North of Rowse's shaft in the 1360 feet level, after driving about 70 feet, it was clear that the reef had folded away there also. A cross cut was driven 54 feet, and an improvement had recently become noticeable. The reef was about a foot wide, and worth 1 ounce, but it was quite clear they had not yet got again into the right part of it. According to the cable, driving south from this cross cut they had a reef a foot wide, and worth 3 ounces, and he was hopeful that there would be something better to tell the shareholders within the next few weeks. The 1260 level had been driven south 150 feet, and for a distance of about 40 feet they had a very rich lode 5 feet wide, and worth 2 ounces (Applause). After driving further south the reef fell off in value, but a rise was put in above, and up to the end of the year it was driven a distance of 217 feet, and in the vein the lode averaged close upon 5 feet wide, and had an average assay of very nearly 3 ounces. The cable message stated that yesterday it was 3 feet wide, and still worth 2½ ounces. He thought they might look forward to some very satis-

factory developments at this place. North of Rowse's shaft the 1260 feet level had been driven a further distance of 600 feet during the year, and about 90 feet from the shaft they caught the southern payshoot, and the reef was averaging 2 feet wide, with an assay of 2½ ounces. Having described in some detail the additional workings in Rowse's shaft, Mr. Taylor passed on to speak of the most important and interesting discovery which had taken place during the past year—the intersection of the new reef of payshoot at the 620 feet level north of Rowse's shaft. That crosscut, which had been commenced some time previously, was resumed in July last, and after driving 44 feet, to a total depth of 113 feet, they met with the eastern reef. The report told them that the 620 north of the crosscut had been driven 159 feet, that the lode for the whole distance averaged 2 feet 6 inches in width, and that the average value was 1 ounce 12 dwts. The level south of the crosscut was driven 56 feet, the average width of the lode was 1 foot 4 inches, and the assays taken valued 18 dwts. to the ton. They had been informed by the cablegram just to hand that in the winze under the 620 feet north they had a reef 2 feet wide and worth 2 ounces, and that the level above the 236 feet level north—the branch on the eastern side—was 1 foot wide, worth 2½ ounces. They had, undoubtedly, not only the satisfaction of proving a new reef lying more than 100 feet to the east of the main reef on which they had been working, but it was a satisfactory and even surprising fact that in this very first exploratory level they would have proved not only the existence of a new reef, but also that of a payshoot already shown to be over 250 feet long. They would probably pursue the development of that new discovery by putting up a rise and running down an inclined shaft from the surface. They hoped as they went down to find ground that would pay for working. It would save taking the quartz the long distance back to Rowse's shaft, and would very much relieve the hoisting power at that shaft. With this important discovery before them, their agents would certainly use their utmost exertions to push on the development work as quickly as possible. At the last meeting he explained that Ribblesdale's shaft was to be sunk vertically to intersect the reef at a depth of about 1400 feet, measured on the inclination, for the efficient and economical working of the great payshoot, and also with the object of raising the miners to and from their work. That was now being prosecuted vigorously. Notwithstanding the very large output of 49,822 tons in the 12 months, the reserves showed a substantial increase of over 4000 tons, bringing the total up to nearly 75,000 tons—a remarkable and very satisfactory answer to persons who had recently thought it proper to run down their very fine property, and to speak of it in disparaging and, as the Chairman had said, most unwarranted terms. One great point was the falling off in the value of the quartz taken from the mine; but, with the facts before them of what had taken place in previous years, he really did not think that that ought to be a cause for apprehension or despondency. Things were not so bright with them years ago as they were now, and the shareholders, perhaps, might not recollect that only a moderate time ago—in 1888—the average value of the quartz from the whole mine for the 12 months fell to 17 dwts. 18 grains per ton, and in the following year it had increased to 1 ounce 7 dwts. 13 grains. As he had already told them, they had (1) the development of a good length of stopping ground above the 520 feet level north and south of Gilbert's shaft; (2) the opening up of a wide and rich reef in the 520 feet level north of Tennant's; (3) the discovery of a new shoot in the 290 feet level south of Tennant's; (4) the discovery of the new southern shoot at Rowse's shaft of the 1260 feet level, and the long rise which he had described above it; (5) the increasing length of the pay shoot in the two deepest levels at Rowse's shaft; and (6) the discovery of the new reef and pay shoot by the cross cut at the 520 feet level north of Rowse's shaft. He thought he might conclude by saying that they might look upon their mine as in a thoroughly sound and improving condition. (Applause.)

Mr. ALFRED ROTHWELL referred to an item of £1270 7s. 10½d. for "Passages and travelling expenses between London and India," asking that details of this expenditure might be supplied to the meeting, showing what part of the sum had been taken by the directors. He further asked that the auditor's report, required by the Articles of Association, should be read to the meeting. He also asked for particulars respecting the number of stamps at work upon the crushing in each month, and the amounts of productive and unproductive ore extracted. He noticed that, while in the last balance sheet the machinery, plant, &c., owned by the company was valued at £148,000, depreciation was only set at £117, a sum working out at less than 3 per cent. To his knowledge it was customary to allow 10 per cent. for depreciation, while some companies even went as high as 25 per cent. Then a considerable amount of profit must be made upon exchange, and he saw no mention of it in the accounts.

The CHAIRMAN, replying, said that the item of "Passages and travelling expenses between London and India," referred solely to the sending of the staff and workpeople out to India, and bringing them back again. The directors had received no payment whatever for travelling expenses. (Applause.) As to the question of exchange, he was somewhat surprised that it should have been mentioned. The directors sent out what money was wanted, which was converted into rupees. There was no gain upon exchange, excepting that they now got rather more for their money than used to be the case.

Mr. ROTHWELL complained that whereas in the report for the year 1890 the directors deplored the rise in the exchange rates, nothing was now said about it.

The CHAIRMAN thought the straightforward course for the gentlemen associated with the circular which had been sent round would be to move a vote of want of confidence in the directors. The shareholders should consider what a small holding these gentlemen held. He himself held 20,000 shares in the company, and had been the largest shareholder from the commencement—(applause)—holding that day more shares than ever before. In all his experience he had never known a company more carefully, attentively, and honourably managed than the Mysore Company. (Applause.) The aspersions—for so he must term them—which the shareholder who had last spoken had cast upon the directors were utterly uncalled for, and utterly unworthy. (Applause.)

Mr. BOYES conceded some little sympathy to those shareholders who had acquired their shares at rather a high price, but resented their unjust attack on the board. (Applause.) Their speeches were not calculated to enhance the value of the company's shares—(hear, hear)—which he himself regarded as a very sound investment.

Mr. DYER wanted to know something about the price of explosives, and about the price of coal.

The CHAIRMAN: I stated the price of coal distinctly in my speech. Mr. DYER also wanted to know something about the mysterious disappearance of part of the company's property—(laughter)—and what they paid for dynamite in 1893, 1892, and 1891.

The CHAIRMAN could only state that the directors had succeeded in making a most advantageous contract for dynamite—one which they would not be able to renew to-day. He might remind the shareholders that at the last meeting he had invited anyone in need of detailed information to apply to the secretary, who was the most courteous of all secretaries. Discussions of this sort in public were a great waste of time, besides tending to depreciate the value of the company's property.

Mr. DYER was proceeding to offer some further criticisms upon points of detail, when a resolution to the effect that he should be no further heard was proposed from the body of the hall, and carried by a large majority.

Dr. BARR complained of the amount the company paid for medical attendance, and cited an advertisement from one of the medical papers to show that the whole attentions of a doctor could be engaged for much less.

Mr. J. TAYLOR said that the point raised by Dr. Barr was one which necessitated a considerable acquaintance with the country before it could be properly decided. The question was one which did not concern the company alone. They had a large number of people to deal with, and they were obliged to have three competent medical men upon the field, besides a hospital and the staff which a hospital involved. Under these circumstances, the charges could hardly be deemed excessive.)

The CHAIRMAN stated that £780 was the total of the charges against the company for this matter.

Mr. DYER, at this point in the proceedings, remarked that as he had been howled down he would invite those who, with himself, were dissatisfied with the management to meet him below in the smoking room. (Loud laughter.)

The CHAIRMAN, in answer to a question put to him by one of the shareholders, said that the question of the renewal of the lease remained nearly where it was before. The minute of the Mysore Government was to the effect that the lease would be limited to a term of 30 years, subject to renewal at the end of that term upon such conditions as might be prescribed by the Government on their behalf. The directors were pressing for a renewal now, but the Government very reasonably said it was rather early to take such a course, otherwise they would be very glad to renew it. All the relations between the company and the Government had always been of the most cordial and friendly character. (Applause.)

The motion for the adoption of the report was then put and carried.

The retiring directors, Captain William Bell MacTaggart and Lord Bibblesdale, and the auditors, Messrs. Tarquand, Youngs and Co., having been re-elected, the proceedings terminated with a hearty vote of thanks to the Chairman.

THE NUNDYDROOG COMPANY, LIMITED.

Developments vigorously proceeding. — A wise financial policy.

The first ordinary general meeting of the Nundydroog Company (Limited) was held on Wednesday, at the Cannon-street Hotel, the chair being occupied by Captain W. BELL MACTAGGART.

The SECRETARY (Mr. I. Crocker) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, the report and accounts have now been in your hands some days, and, therefore, I presume, you will, as usual, take them as read. That being so, I may say in the first place that the key note of this report is certainly one of disappointment—of disappointment, however, I feel bound to say, chiefly and, in fact, almost solely in so far as the actual returns of gold are concerned—that is to say, in regard to the value of the quartz, and not in regard to the work done, the development of the mine, or the prospects which may be hoped for. The disappointment lies in a falling off in the value of the quartz, and that falling off was due to several causes, the chief of which was the comparative failure of the stope in the back of the 840 feet level. In addition to that, however, the lower levels of the mine, the 920 feet and the 1000 feet levels, have been driven to a large extent through barren ground, communications which had to be carried out in order to open the mine for future workings, as Mr. Taylor will explain by and by. It so happened that they lay between two pay-shoots on the fringe of each, so to speak, and unfortunately, we had to work through barren ground. There was also a further and not inconsiderable cause of our disappointment, and that was that in Kennedy's and Taylor's shafts the workings have been through country rock. This means in the first place that while you are sinking you get no material for your mill, and this drawback brings with it a feeling of uncertainty and disappointment to those shareholders who have followed very closely the operations. While you are carrying out work of this sort you hear nothing of the lode, and all you get from the reports is something of this sort—"Kennedy's shaft sunk so many feet. No change in the bottom," or "Taylor's shaft sunk so many feet; rock in the bottom still continues very hard"—until people who are unused to mining think there is nothing in the mine at all; when, as a matter of fact, close to you there is probably a rich and strong lode, and you have to continue operations until a sufficient depth has been reached for the next level, when a cross cut may be made to the lode. I do not propose to say anything more about the mining, because Mr. Taylor will explain that to you very shortly. I will, therefore, now turn to the accounts, and will invite your attention in the first place to the revenue accounts, and to the costs of the ore—the mining and milling costs. Before I make any remark upon that, there is a matter which I must notice. There was a letter written by a gentleman to the *Mining World*, which appeared on Saturday last, and which, I think, is worthy of explanation. The writer, who, I suppose, is a shareholder, practically stated that while the crushings of the Nundydroog Company had only been about one-half as much as those of the Mysore Company, the mine costs of the former had been £40,441, against £62,880 of the latter, thereby showing on the face of it that, while the Nundydroog crushed one-half the quantity crushed by the Mysore, its mine costs were £9000 more than half those of the Mysore, and its milling costs £3000 more than one-half. Now, as regards the mine costs, it should be remembered that the Nundydroog has had to do an excessive amount of deadwork this year—such an amount as we hope we may never have to do again. As regards the milling costs, the gentleman would have seen had he referred to the Mysore reports that they were split into two sections—the milling costs and the costs of treating tailings are entered separately. In the Nundydroog we have got the milling costs in one lump, amounting to £11,000, as against £35,000, which makes about the proper proportion. The reason we have not split them up is that our manager sent the item here in this form. We wrote and asked him for more details, but they had not arrived when the report was issued. We have since received the figures, which the secretary will be glad to show to any gentleman who wishes to see them. The milling costs of the Nundydroog amount to £3729, and the treatment of tailings to £2839. I think the gentleman who wrote that letter deserves some credit for noticing what had escaped the attention of those who are seated at this table. I hope you will think that this explanation is quite satisfactory. (Hear, hear.) The next matter to which I may refer is the directors' fees, which you see are put at £646, instead of the £1500 which has been the sum for the past few years. This comes from the Articles of Association in which you settled that we were to receive a remuneration equivalent to 2½ per cent. on all dividends paid to the shareholders. The dividends have been reduced, consequently our fees have been reduced in exactly the same proportion. The report is consequently disappointing to us in two ways. (Laughter.) The next thing we have to consider is the profit and loss account. There was carried forward as profit for twelve months, ending 31st December last, an amount of £37,929 11s. 9d., and that was disposed of as follows:—Interim dividend of 1s. 6d. per share, paid 4th August, 1893, £14,998 7s.; income tax on profits, £1383 7s. 6d.; written off for depreciation of machinery and plant, £1273 4s. 11d.; preliminary expenses, £1788 18s. 10d.; carried to reserve fund, £500; amount of unproductive expenditure for 1893 written off £5760 1s. 7d. This, amounting to £25,703 19s. 10d., leaves a balance of £12,225 11s. 11d. to be carried forward. While I am on the subject of the accounts, I may say one word about the dividend we have just declared. A balance of £12,225 was carried forward. A shilling having been paid out of that, £1300 will be left. I am not prepared to say we might not have squeezed you out another 2d.—(laughter)—but we thought, having regard to the fact that the value of our quartz was falling off, it would be better to make every year pay for itself. (Applause.) We thought, and we hope you will agree with us, that it was better to have a clean sheet than to have anything hanging over you, because when we come to consider the question of the next interim dividend—which we hope we shall consider before many months—there will in that case be no debts to meet, and whatever you earn will be your own property, and can be divided amongst you. Therefore, as I have said, although there has been some disappointment in the falling off in the richness of our ores, there is not much fault to be found with the amount of work which has been done, or, I trust, much

disappointment in the future, and, as your finances are in a thoroughly sound condition, and as you will be in a position to resolve whatever you do earn, it is not without some satisfaction that I venture to move the adoption of the report and accounts. (Applause.)

Mr. J. SHAW KENNEDY seconded the motion.

Mr. JOHN TAYLOR said that at the last annual meeting he had stated that he looked forward to increasing the output of the mine, and also the returns from the ore. The first part of this programme, the increasing of the output of the quartz, was within their power, and it had been fully carried out. Some 25,760 tons were treated in the mill, against 18,176 tons for the year 1892—a large increase of over 7500 tons. In consequence, however, of the falling off in the value of the quartz, which, of course, they would understand was beyond their control, the much larger quantity of quartz he had spoken of had contained actually 3489 ounces less gold. That, of course, was very disappointing, but they must recollect this was no new feature in the immense Colar Gold Fields, where they had had their ups and downs—very satisfactory ups and very disappointing downs. The falling off, therefore, should not disturb them much, for he hoped before long they would see the better yield of quartz they had been used to in years past. The development work underground in the shafts and levels had extended to 4666 feet, or more than 700 feet beyond the work done in the previous 12 months. He anticipated that the rate of progress would be further increased by the aid of new air compressing machinery, which would very shortly be put into operation. The rock drills were a very important matter. They had done most excellent work, which he thought was very clearly shown by the fact that one of the levels—the 840 feet level—was driven 120 feet in one month. Before passing on to describe the working, he would read a cable message which came yesterday evening:—

Taylor's shaft 1025 feet deep main shaft will shortly be completed to 840 north of Taylor's shaft. 1000 feet level north driven 320 feet. Lode 6 inches wide, assaying 5 dwts. per ton. 1000 feet level south driven 150 feet. Lode 12 inches wide, assaying 10 dwts. per ton. Stopes 840 north and 760 north of Taylor's shaft lode 4 feet wide, assaying 1 ounce. 840 north winch sunk 180 feet. Lode 2 inches wide assaying 12 dwts. Kennedy shaft 520 feet deep. Commenced driving 440 north of Kennedy. Driven 320 feet. Lode 1 foot 6 inches wide, assaying 2 ounces. 440 south of Kennedy driven 200 feet. Lode 12 inches wide, assaying 5 dwts. per ton. North shaft 300 feet deep. Health good. Prospects encouraging.

Commencing with the original mine, the cable message told them that Taylor's shaft had been sunk 1025 feet. They would understand that the sinking of the 147 feet level was not on the reef, but to the west of it. The reef had to be reached by a crosscourse. The 1000 feet level had been driven south 58 feet, where the average width of the reef had only been about 6 inches, and the value about 6 dwts. An improvement had, however, since been noticeable, and the report of February 21st stated that the reef was 1 foot in width, and gave an average assay of ½ ounce. This improvement was confirmed by the cable message. North of Taylor's shaft the 1000 feet level was driven in the year 120 feet, the average width of the reef being 1½ foot, and its value about ½ ounce. According to the cable message, it was now only 6 inches in its average width, with an average assay of 5 dwts. This was not a very encouraging report, but he did not think they were yet far enough north on the bottom level to expect to get the very good pay shoot they had in the level above. Mr. Grey spoke of it being satisfactory to note that the lode was very much stronger below than it was in the levels above at corresponding lengths. By that he meant that at points which were under similar points in connection with the vein—not corresponding lengths of straight vein, but on the inclination of the pay shoot—the lode was wider and stronger than it was at similar points. Above this, in the 840 feet level, they had found a very rich lode. The 1000 feet level was driven a great distance in the year—534 feet, for a good part of which—140 feet—the average width of the lode was 3½ feet, and its average assay 2 ounces 2 dwts. The remaining 394 feet averaged 9 dwts. and 12 dwts., and the reef carried gold all the way. Above that level they had a very rich stope in the back reef, in places richer, as Mr. Grey said, than anything seen in the mine before. There were in the room some beautiful specimens of the ore found there which had been sent over in a box some time before. Below the 840 feet level they had a winch which had gone down some considerable distance, all the way in a good lode, so that this was a very interesting point. The main shaft, as the cable said, would shortly be completed to the 840 feet level, and Mr. Grey hoped to have the 1000 feet level under the shaft by June. With regard to the virgin ground to the north, they had commenced vigorously to drive the 680 feet level, to prove it in the direction, of course, of Kennedy's Mine. That would be proceeded with in all speed. If there were disappointment with regard to the original mine, there was no disappointment with regard to Kennedy's Mine. There they had had a year of exceedingly satisfactory development. The Kennedy Mine was, as they were aware, a long distance from the other one—very nearly 1890 feet. The Kennedy shaft, as the cable message stated, had now reached a depth of 520 feet, at which they had now commenced to drive. The lode there had passed to the west of the shaft, and, therefore, they were given no information with regard to the lode itself. In sinking below the 440 feet about 10 feet the lode was in the shaft, and it was rich and good, about 2 feet wide when last seen, and giving an average assay of about 2½ ounces. The 440 feet level had been driven south of Kennedy's shaft. The reef there was small, but had been continuous for over 100 feet, and the cable message stated that it was about 1 foot wide, and worth 6 dwts. There also they would drive with all possible speed in the direction he had already indicated. The left piece of ground was, so far as modern history was concerned, entirely unexplored. The 370 feet level was driven 169 feet, the reef there being 2 feet wide and worth about ½ of an ounce. Above the 300 feet level the shaft was being run down through the old stoper, and the winding engine had been moved from Webb's shaft to that point, by means of which they were able to considerably increase returns to the mill. North of Kennedy's shaft again the 440 feet level was driven 218 feet. Here they had a good lode all the way, with an average of 2 feet in width—1 foot 9 inches wide in one place and in another 4 feet—and the quartz all of high quality. They, of course, knew nothing of what might be immediately above. The level above—the 370 feet level—was driven for 300 feet, the reef averaging 1½ foot in width, and giving an average assay of 17 dwts. Above the level they had a very strong lode—6 or 8 feet wide, and worth about 2 ounces. So it was obvious that they had very satisfactory development in that mine. Of course, it was as yet only in its infancy, but he hoped it was going to turn out very well. In regard to the two mines, he might say that it was evident to him that they were not on the same reef. This was a very curious fact, because many people imagined that they knew precisely all about the Champion Reef of the Colar Gold Field, and spoke with great decision as to where it went. From the plans which had come to him, from the recent drivings north from the mine from Taylor's shaft and Kennedy's Mine, it was pretty clear to him that unless something extraordinary happened between the two mines they had actually got two reefs instead of one. They should not, however, build hopes upon that until they knew more about it. However, he did not wish to keep any of the shareholders in the dark, and if they wished to look at the plan he would be glad afterwards to point out what the position of things was. With regard to the reserves, they would notice they were well maintained. They had now 27,205 tons, which was 755 tons more than they had last year, in spite of the increased output. The falling off in the average yield the Chairman had explained, but he had not mentioned that it was due to the narrowness of the reef in the lower levels. They had to use heavy rock drills and heavy charges of dynamite, and when the reef was broken down a great piece of country rock came with it. It was practically impossible to pick out the bare rock, and, therefore, it had to go to the mill with the quartz. The results of the year's working in the Northern Mine at Kennedy's must be looked upon as gratifying. The lode, which was down as far as 300 feet, and was formerly never wider than 3 feet, had now opened out—the 370 feet level to 5 feet, 6 feet, and even 8 feet in one of the stopes, and the

average width was considerably greater in the 370 and the 440 than it was in the shallower ones. As far as he could judge, he felt no doubt they would now be handsomely rewarded for the outlay they had made in the mine. (Applause.)

Mr. ELLIOT enquired when the 1000 feet level would get under the main shaft.

Mr. TAYLOR: In June.

Mr. ELLIOT said Mr. Taylor had mentioned some very rich quartz in the 760 feet level, and he might ask whether this rich stuff was mixed with the other.

Mr. TAYLOR: I fancy Mr. Grey is getting as much as he can to the mill.

Mr. WAINWRIGHT thought the management expenses of the company very much higher than they ought to be, and that the board of directors would act much more independently if they had not Messrs. Taylor as colleagues.

Sir CHARLES LAWSON complained there was no allusion in the report to the new block to the west of the two mines.

Mr. TAYLOR replied that the question had been continually before the board, but having no vast amount of capital, and having a large scale of operations on hand, the board thought it better to wait and see what could be done in the other parts of the mine before attacking vigorously the western ground. (Hear, hear.)

The CHAIRMAN, in reply to these and other questions, said he could hardly make any very definite statement as to the number of labourers employed by the company; he could only say that the labour bill was kept at its lowest figure. As regards the question of the company's management, he might say that he had had the honour of being associated with Messrs. Taylor's firm for a great many years, and had always found them ready to make the largest concessions in favour of any company which was in low water. That company especially had had a striking instance of their consideration. He thought the remark Mr. Wainwright (who had formerly acted as auditor to the company) had made extremely out of place. It should be remembered that the directors had now much more trouble than they would have had if the development of the mine was going on quite smoothly. (Applause.)

Mr. TAYLOR said he did not court his present position, but it was often a convenience in the office for him to be able to sign his name as a director of the company. He wished, however, to protest against the insinuation that, because he and his brother happened to be on the board, the directors were hampered in any way. They had often discussed matters with the directors, but neither he nor his brother had ever brought any influence to bear upon the decision, other than would have been the case had he simply been a manager. (Applause.)

The CHAIRMAN emphatically endorsed Mr. Taylor's remarks, and said the advice which the two members of the firm had tendered was always of the highest character. He should be very sorry to have the conduct of the mine without the assistance of Messrs. Taylor.

Mr. WAINWRIGHT said he had desired to cast no reflection on Mr. Taylor, but he maintained that the board would be more independent were there not two members of the firm on the board.

Dr. BARR said he thought some reduction could be made in the medical expenses incurred by the company.

The CHAIRMAN assured the meeting that the board strongly desired to exert every possible economy; but he thought there could hardly be any reduction in this particular.

The motion for the adoption of the accounts was then put and carried unanimously.

On the motion for the re-election of Captain William Bell MacTaggart and Mr. John Taylor, an amendment was moved by Mr. WAINWRIGHT, and seconded by Sir CHARLES LAWSON, excluding Mr. Taylor from the directorate. It presently appeared, however, that the amendment only had three adherents in a crowded room, and the original motion was carried by a large majority.

The auditors, Messrs. Tarquand, Youngs and Co., having been re-elected, the proceedings terminated with a hearty vote of thanks to the Chairman and directors.

ELKHORN MINING COMPANY, LIMITED.

Splendid results, despite the bad year.—A vigorous but cautious policy.

The fourth annual general meeting of the shareholders of the Elkhorn Mining Company was held on Monday, at Winchester House, the chair being occupied by Mr. J. W. HART.

The SECRETARY (Mr. Charles Pakeman) read the notice convening the meeting.

The CHAIRMAN, having expressed his regret at the unavoidable absence of the Hon. A. G. Brand, M.P., said: The accounts, gentlemen, have been in your hands for some short time past, and, I am sure, received your very careful attention. I think the statement laid before you is very full, and at the same time very concise; at least, I trust it may seem so to you, for it has been our desire to place the accounts before you in the fullest possible manner, and to explain all it has been possible to explain. Should there have been any omissions, the board will be very pleased to give you all information in their power. During the year the profits have amounted to £41,738, as against £79,883 in the previous year, showing a difference in the two years' working of £38,145. I don't think there is any need to seek far either to explain, or for you to understand, why this great difference has taken place. The extraordinary decline in the value of silver has necessarily occasioned a loss in the revenue of the company as compared with that of previous years. But when we consider that, notwithstanding these very heavy losses, the company has been able to pay 25 per cent. to the shareholders and to carry over £5700, which is equivalent to about 3½ per cent. more, I don't think you will consider the result an unsatisfactory one. (Applause.) Indeed, I may venture to say that the directors, under the most trying circumstances, to have accomplished so much is at least a result which would have been very creditable even to the best silver mining company in this or any other country. It must be remembered that, so far, such results have not been attained in the face of the fall in silver, without the most extreme economy being exercised in every department, by the very able management we have on the other side. I must say our manager has exercised the strictest economy in every detail, and I hope that in the future there may be means of effecting other slight economies that will show to the benefit of future returns. You will also note in the accounts that we have got 3698 tons of second class ore. That is an additional asset of some value—perhaps of some considerable value. We have, however, taken no credit whatever for it. It has simply been carried forward in the hope that it may, in the future, be of benefit to the shareholders. With regard to current expenses, I should mention that the London charges this year have been somewhat less, and that other amounts are considerably less, showing a total of £3800 less on working expenses, as compared with previous years, whilst the tonnage produced from the amount of ore manipulated was practically the same in quantity. I think the slight difference in the total tonnage amounts to some few hundred tons; therefore, I hold that the reduction of itself is a most substantial proof of the great care and economy exercised in all directions. (Hear, hear.) You will observe in the accounts that the actual cost of production—that is to say, mining, milling, and other similar charges—amounts to something more than it did last year—approximately about 62c. per ton. This requires some little explanation, though not much, because I think, on reference to the report, you will see that this is due to the increased depth at which ores are now extracted; but what I wish to point out is the fact that all development works are charged to revenue account, and when I tell you that we have expended during the year on underground development alone some £4000, and that the sum has been provided out of the current revenue, you will, I think, see that a good deal has been accomplished, though the expenses have only been slightly increased. (Hear, hear.) It is not in any inviolable sense that I point to the fact that it is a very common course to charge some part of improvements and development to capital account. As you will have gathered from former meetings, it has

INSTITUTION OF MINING AND METALLURGY.

ADMIRABLE PRESIDENTIAL ADDRESS FROM PROFESSOR HUNTINGTON.

THE completion of one more year in the life of the Institution of Mining and Metallurgy was marked on Wednesday night by an admirable Presidential address delivered by Professor HUNTINGTON, before the annual meeting, held in the Geological Museum, Jermyn-street. Beyond this predominant feature the importance of the occasion was appropriately maintained by a large and, in a measure, enthusiastic gathering of the Institution supporters. For the first part of the proceedings the chair was occupied by Mr. GEORGE REYNOLDS, but at the termination of the graceful little ceremony of hand-shaking, usual upon the occasion of a change in Presidents, the seat of office was held by Professor HUNTINGTON.

The CHAIRMAN said: Gentlemen, Our current session having ended, and a change in the officers of the Council having been caused by the fluctuation of time, the following changes have been made:—Professor Huntington becomes the new President of the Institution of Mining and Metallurgy—(applause)—and the Vice-Presidents are Mr. J. H. Collins and Mr. Joseph Garland, who, I regret to say, is too ill to be present this evening. The members of the Council are:—Messrs. Charles J. Alford, Geo. A. Ferguson, Benedict Kito, Walter McDermott, James Maclear, Edward Riley, Edgar Taylor, William Thomas, Claude Vautin; the Hon. Treasurer is Mr. Arthur C. Claudet; and the Hon. Secretaries are Messrs. S. Herbert Cox, Percival Fowler, and C. Algernon Moreing. I myself, as retiring President, become an *ex officio* member of the Council. I may point out for the information of those who are not aware of the change, that our honorary secretary, Mr. Ferguson, having resigned, it was deemed expedient by the committee of the Council to have three honorary secretaries, for the simple reason that the precarious mode in which mining engineers have to get their living rendered it not impossible that one or two of the secretaries might be absent. With regard to the accounts, I have pleasure in stating that the funds of the Institution are in a prosperous condition, and we have a balance of £365 to credit. (Applause.) The statement of accounts will be left on the table, when anyone who is desirous of doing so can examine it. And now, gentlemen, before vacating the chair, I am glad of the opportunity of thanking those present, and many who are not present, for the sympathy, encouragement, and assistance which I have received from them during the period of my career as President, for which I beg to thank you and them most sincerely. (Applause.) During its infancy the Institution has been liable to some of those illnesses which are natural with that period of existence, whether of an institution or of a race. I sincerely trust, however, that they have been successfully overcome, and, having acted in some degree as nurse to the Institution, since its commencement, I trust that I now leave in your hands on retiring a robust and sturdy infant. Our thanks are due to the proprietors of *The Mining Journal* for the hospitality they afforded to us during the earlier periods of our career. In introducing my successor to the chair, I think it a happy idea that one so well versed in the metallurgical science as Professor Huntington should take the Presidency of the Institution, and I think it is desirable in future, in accordance with the name and spirit of the Institution, that the President should be selected alternately from the branches of mining and metallurgy. (Hear, hear.) Gentlemen, again thanking you for all your kindness in the past, and wishing you every success, I beg to introduce to you my successor, Professor Huntington. (Loud applause.)

Mr. Seymour, having shaken hands with Professor Huntington, retired from the chair, and the new President, having succeeded to his place, at once delivered his presidential address, as follows:—

The Presidential Address.

No President worthy of the name and its traditions ever began an address without an excuse and an apology from him for his and its shortcomings. Doubtless mindful of this, and wishing to do me special honour by affording me an opportunity of "maximising" the excuse, and thereby minimising the apology necessary, the Council kept me in the dark until within a month of now of its intention to elect me President of this Institution. Whilst I am obliged to the Council for the honour it has done me, on the whole, I should have preferred to have had a little less opportunity for excuses, and a little more time in which to collect ideas and suitable materials upon which to base my remarks to you. For, although I have thus far spoken lightly, I feel deeply the great responsibility I have undertaken. The thought that I should be President for this year had never entered my mind. I had looked upon it merely as a remote possibility of the dim future, which might safely be ignored for the present. We are all slow to learn that we are, to a great extent, but the creatures of circumstances, and know not what the morrow will bring forth. On the other hand, we all of us influence circumstances more or less, and cannot disclaim responsibility.

The Institution is still, if not in an embryonic condition, at least in its infancy; and, like all infants, its future will depend largely on those who have its early guidance. It may have enormous potential energy, but potential energy is a dangerous thing unless well guided. The same little packet of explosive, according as it is properly applied in a mine or improperly applied to, say, the Royal Observatory at Greenwich, may do much useful work or incalculable mischief.

Is the Institution Necessary?

I may, perhaps, be allowed to go one step further back, and put the question: Is this Institution necessary? For it is possible to have potential energy which is not required where it is found. Such is the case, unfortunately, in this small island; the labour market, in fact every calling, is overstocked. Yet for this potential energy there are plenty of outlets possible in our great colonies, if only, in electricity's parlance, "good contact" could be made, and "a connection" established.

Is, then, this Institution required? That it exists does not necessarily argue that it ought to exist, or is capable of doing good work. If, however, on reviewing our position, we decide in the affirmative, then let us one and all put our shoulders to the wheel, and lift ourselves out of the quagmire of uncertainty surrounding the early steps of every institution into a more elevated position of assured success. I do not for one moment wish you to understand that I consider there is any doubt as to our having already achieved a great measure of success. There can be no doubt about it, but much remains to be done. (Hear, hear.)

The Inauguration of the Iron and Steel Institute.

It may encourage us and guide us if we look round and note what has happened in the case of others who have been somewhat similarly circumstanced to ourselves. Take the Iron and Steel Institute, for instance, which was established in the year 1869, with, up to a certain point, the same objects as we have in view, only limited to those who are engaged in the production and manipulation of iron and steel. The Iron and steel industries far surpass all others of the same class in this country; in fact, it is no exaggeration to say that they have mainly contributed to make the British Empire what it is. Yet one year more has to run its course before the Iron and Steel Institute can boast of the small span of existence comprised in a quarter of a century.

The Iron and Steel Institute started under the most favourable auspices. It had for its first President the late Duke of Devonshire, a man of exceptional ability, who was no mere figurehead; his address was highly technical, and characterised by a clearness and comprehension of the subject which could hardly be surpassed. The late Earl of Granville was also one of the first members enrolled, and he took an active interest in the Institution as long as he lived. The Duke of Devonshire, in his address, remarked that "The advantages of mutual co-operation among those engaged in a common

pursuit, whether scientific or practical in its character, are so manifest that to enlarge upon a proposition, the truth of which is universally admitted, would be a needless waste of your time." And further on he said: "To anyone, indeed, who possesses a general knowledge of the enormous scale on which this manufacture is now carried on, and who is, at the same time, aware how important is the aid which chemical science has already shown itself able to render both towards a true understanding, and towards the improvement of the processes by which the raw ores are converted, and how essential are the services of mechanical science in the various applications of the manufactured products, it must be a matter of surprise that an institution of this kind has not been long ago called into existence." The President made no attempt at explanation, but he added the significant remark that: "The importance is the more manifest when we bear in mind the progress which other countries have recently been making in this branch of industry."

It is worth while to enquire why, if the foregoing proposition is so universally admitted, the Iron and Steel Institute had not come into existence before, and why it was so late as only two years ago that the Institution of Mining and Metallurgy was started with not a little difficulty.

It is probably that the French International Exhibition of 1867 was the immediate cause of the formation of the Iron and Steel Institute, it having been reported that judging from the exhibits some of the continental nations "had become our superiors in practical and scientific skill." This statement was subsequently refuted by certain well qualified persons, who made a careful examination of the continental works. Amongst them was Mr., now Sir Lowthian Bell, who reported that "If the distance which separates us as ironmasters from foreign nations has diminished in recent years, this circumstance is rather due to the vigorous manner in which we have been followed, than from any want on our own part in leading the way." Looking back we see that these words very accurately described the position of affairs.

Progress of the Iron and Steel Industries.

The scare they had had made those concerned in the iron industries realise fully that they must strain every nerve in order to prevent the extent of their lead being seriously diminished. The iron and steel industries of this country had jog-trotted along for several centuries an easy first, and it is much to their credit that they realised even so late as they did the advantages which would result from co-operation on a national scale. In this connection it is interesting to note that local co-operation in the industries in question had been initiated many years before. And what was the incentive? Why, the struggle for existence; the realising that to survive they must accommodate themselves to altered circumstances. Then competition was not between this country and foreign nations, but between one part of this country and another. Thus, in 1857, the South Wales Institute of Engineers was formed, 22 years before the Iron and Steel Institute. The first President was Mr. Menelaus, the manager of the great Dowlais Iron Works, a man whose name is probably little known to the rising generation, but who contributed largely to make the iron and steel industries of this country what they are. The chief reason Mr. Menelaus gave why they should co-operate was that they were losing ground from the exhaustion of their cheaply worked minerals, and that the cost of labour was increasing, which would necessitate the substitution of machinery. The Institute was formed, he said, to help them to compete with their more favourably placed neighbours. That was 37 years ago, and the local ones have since practically been exhausted; but not the vitality of the undertaking, one of the largest of its kind. Determined to remain at the front, by keeping pace with the requirements of the times, under the able management of Mr. E. P. Martin, they have recently boldly moved the plant from Dowlais, and rebuilt the works on the most modern plan at the port of Cardiff, where a plentiful supply of imported ores can be obtained, and the expense of railway carriage, always very great, be got rid of.

The South Wales Institute.

Thus we see that it was stress of circumstances which originated both the South Wales Institute and the Iron and Steel Institute; in the one case local, in the other national. The progress in the iron and steel industries in the last 25 years has been extraordinary, and I have no hesitation in saying that a large share of it is due to the existence of the Iron and Steel Institute. The members of those industries are no longer working against one another in a very narrow spirit, being afraid to confide their ideas one to another lest they should give a competitor an advantage. All this narrowness has disappeared, and now members visit one another's works and discuss everything concerning them at every opportunity. The interests of the individual are in no way harmed by this. As in everything else, the best man wins in the long run, whilst the rest of the world are benefitted by more rapid progress.

This, the most important point of all, has been brought about, not by a direct movement with that object, but as an indirect result of men putting aside their petty jealousies of one another and combining against a common adversary.

The Society of Chemical Industry.

The inertia which has caused us to wait until we were driven to bay is the result of the dominant position this country has occupied in the trade of the world. Others struggled for the mere crumbs, and it was some time before we realised what a large share of the whole loaf these crumbs might come to represent. This inertia has pervaded the whole industrial policy of our country. The Society of Chemical Industry only came into existence in 1881. The Continent had long had numbers of technical journals. We had next to nothing, and it often happened that important information about an English invention first reached us in the form of an abstract from some foreign journal.

Professor Sir Henry Roscoe, in the first presidential address, said: "We have heard much lately about foreign competition, or even the decay of English manufactures. That foreign competition should become year by year keener, and that we who have led the way, and had the advantage of the start in the race, should feel this competition can in no way surprise us. That English manufacturing skill is on the wane, or that the inventive genius of the people is drying out, I for one do not believe. Only let the Englishman know what he really needs, and he will soon take care that he gets it, be that need an increased technical or educated skill, or a wider diffusion of the knowledge of the scientific principles. To assist in this direction, and so enable us more satisfactorily to meet the inevitable increase of foreign competition, is one of the objects for which this society has been founded." To the credit of this society, be it said, once started, they have thoroughly well done their work.

There is something deliciously naive in Professor Roscoe's remark that you have "only to let the Englishman know what he really needs, and he will soon take care that he gets it." Exactly; you have "to let him know;" he will not foresee for himself. The only way of "letting him know" is to put your hand in his pocket; but he never realises the actual state of affairs until your hand is, as the saying goes, on his purse strings, then he begins to take steps to protect himself, and by means of the great national wealth polls through somehow or other, but not unscathed.

England's Colonial Policy.

As having an important bearing on the mining and metallurgical industry, another case of great want of national foresight may be instanced. I refer to our colonial policy—if policy it can be called—for it has consisted of a masterful rather than a "masterly inactivity." Yet the position of our country, now second to none the world has known, must in the near future be determined by its relations to its colonies and dependencies. This is seen by all at home who are not immersed up to the eyes in petty party politics blinding them to all else. Other nations are not only fast tending to supply the greater part of their own requirements, but are even trying to oust us in our own colonies.

The foresight up to the present has all been on the part of the colonies themselves. The building of the Canadian Pacific Railway—take but one instance—will be a lasting memorial of the enterprise and sagacity of their leaders. It is they, again, not we, who are taking active steps to brace the British Empire round with the

never been the rule with this company to charge any such expenses to capital account. They have all been taken out of the current earnings of the company, and, therefore, all the improvements to the mine and the developments that take place from time to time are paid for out of revenue at the time, and there is no accumulation or increase of capital. (Hear, hear.) There is another point arising from these developments which should be borne in mind—the fact that we have always, to the best of our ability, endeavoured to keep our reserves well in advance, and we are in the satisfactory position of being able to tell you that the ore now in sight available for extraction amounts to 22,500 tons, as against 23,500 last year. Therefore, I think it must be admitted that we have in no way sought to neglect the important consideration of keeping a good reserve of ore in advance of us, and, in consequence, at the end of the year we had as much ore within 1000 tons as at the commencement. (Hear, hear.) Of course, as I am reminded, I am quoting estimates only, but judging from the accuracy of former estimates we can safely take it for granted that our manager is likely to under estimate rather than the reverse. During the year also it has been necessary to install a new set of pumping engines, our pumping engines at the different levels not being equal to the requirements, owing to the increased depth at which we are now working. Those engines have been installed and are doing remarkably good work. The cost of these engines has been provided for out of the sum of £17,000 allowed from revenue in previous years, so as not to increase our capital account. Therefore we have not in any way increased the capital account. I may mention that of this £17,000, which you were good enough to allow us to take from revenue on two previous occasions, £14,512 is still available for that or similar purposes at any future date. (Applause.) I am reminded that though the pumps had been paid for out of the £17,000, all the cost of the installation works necessary to put them into order has been paid for out of current revenue. So we have only really taken from this £17,000 the simple manufacturers charges for the new engines. Of course, you are all aware of the immense depreciation which has taken place in all silver industries, and the company has to suffer like others. The many disturbances which have taken place in America have occasioned a good deal of anxiety in connection with the shipping of ores to the smelter, which finally ended, however, without any loss to the company—a fact due entirely to careful management. Our bankers there, owing, however, to no insolvency on their part, but to the difficult circumstances in which they were placed, were bound to close their doors, and had at the time considerable funds in hand belonging to the company. They have since restarted, and not only have they met the company in the most honourable way, but they have paid off the balance remaining due to the company, and have fulfilled their obligations in a most honourable way. I believe they will in the future become a very rich bank. We have got all that is due to us with interest at six per cent. during the time the money was not available. The only other subject likely to occasion you any anxiety is the cost of the production of silver. We know that many mines are now closing down very rapidly—even those which were giving large returns before the time of depression. Therefore, we have very carefully and very closely analysed the whole of the past workings to arrive at a definite conclusion by which we may tell you at what price we can produce silver. Of course, all these results are based more or less on data subject to revision, and in the hope that we may be able to work with the same or even greater economies. The result of the calculation is that we can produce our silver, as near as possible, at 20d. per ounce—an amount which, even at the present price of silver, will leave us a very reasonable margin. If it is your pleasure to consider the results of the past year satisfactory, I would wish to explain that they are very largely due to the efficiency of the staff belonging to the company. I am quite certain that it would be impossible under any circumstances, judging as I do from the communications we have received from our manager, and from a very close scrutiny of his accounts and report, to find a more capable, intelligent manager than we have got in Mr. Charles A. Molson. (Applause.) Not only does he look carefully into every detail of expenditure, but he anticipates very largely the ordinary course of events, and on many occasions we have been informed in London of probable changes that really would not have occurred to many managers. We have thus been able to safely conclude that we have got an able, careful, and intelligent manager, and I shall not be doing him full justice even if I say that he is as perfect a servant of the company as it would be possible to get. He has, moreover, been heartily supported by the whole staff, and there is no single dissent among the company's servants. It has been the aim of the directors to make them comfortable, and they have co-operated with the utmost heartiness in everything that has been done from time to time, in many cases under the most trying circumstances. The London staff are known to all of you, and I am sure I may sum up my remarks in their favour by saying that their anxiety and zeal in the company's interest is as great to-day as ever it was, and I don't think it possibly could be greater. (Applause.) I think, gentlemen, I need trouble you no longer; but the board will be very pleased to answer any questions that may arise later. In conclusion, I beg to move the adoption of the report and accounts.

Mr. W. A. LINDSAY, in seconding the resolution, said he had only one observation to make, which concerned the question as to whether anything ought to be done by legislation to steady the price of silver. He did not think that the satisfactory accounts of the Elkhorn Mine were any argument to the contrary. It must be remembered that the reason the company had so favourable a state of finances after such a year as 1893 was that the mine had been bought remarkably cheap. This reflected the greatest credit on the promoters of the undertaking.

Mr. CROSDALE referred to the Chairman's statement that the cost of production was at the rate of about 20d. per ounce, and asked what would be the prospects for next year, supposing the price of silver remained at what it was to-day—27d. He further enquired whether the Chairman could afford him any information as to how many mines had shut down owing to the depression.

The CHAIRMAN replied that with silver at its present rate the profit for the year under existing circumstances would have been £22,186. That was on the assumption that they produced in the next year exactly what they had done in the past, and there was absolutely no reason to doubt that the mill would be able to do in the next year quite as much as ever it had done. The question as to how many mines had shut down was something of a conundrum, and he thought it would be next to impossible to get anything like reliable statistics. He could only say that the number was a very large one.

Mr. BALDWIN enquired whether the directors were satisfied with the appearance of the lower levels of the mine. The CHAIRMAN replied that there was no cause for dissatisfaction. There were times when they did not get so much out of the levels as they could wish, but, taking the aggregate, he thought there would not be any grounds for anything but satisfaction.

Mr. PAGE suggested that the London expenses should be cut down. He believed that the directors had some time before received a bonus of £1000.

The CHAIRMAN: No; never. The shareholders offered it; but we refused to take it. The London expenses were always at this figure. Continuing, the Chairman said the office expenses in London were already so low that he certainly should not have the courage to suggest any reduction upon the present amount. (Hear, hear.) The motion for the adoption of the report and accounts was then put and carried.

Mr. BRETON moved a resolution to the effect that, seeing the prosperity of the company depended largely on the price of silver, it should be left to the discretion of the board to subscribe a sum of not more than £100 to the Bi-metallic League, in order to encourage that body in bringing its views before the public.

Mr. LINDSAY seconded the motion.

Mr. LINDSAY (a director) was not in favour of bi-metallism, but would support the motion in order that both sides of the question should be placed before the public.

The motion was carried unanimously.

The retiring directors—the Hon. W. C. Pypys, and Mr. J. W. Hart—having been cordially elected, the meeting ended with a hearty vote of thanks to the Chairman.

only, and which can ensure its existence and continuance; direct a wide communication throughout by rail and steamer, and by telegraph and cable.

A True Simile.

The Empire may be likened to the human body, the means of transit corresponding to the arterial system, having its source in the heart, and carrying nourishment to the uttermost ends; the telegraphic system, like the nerves, setting everything in motion. The simile is more exact than might at first appear, for as the nerves centre in, and are controlled from, the head, so is the commerce of the Empire controlled from this country, which is its head. The means of transit have, as we have seen, their source in the colonies, which are, therefore, the veritable heart of the Empire, collecting and distributing the nourishment of the body corporate. And further, he is observed, that just as the head does not develop the rest of the body—they grow simultaneously from the protoplasmic properties of the primal germ—so this country has not developed the colonies. Perhaps after all, then, it was not the destiny of this country to form the British Empire, but only to occupy the position of the head.

But, if I may be permitted to carry the simile a little further, it must not be lost sight of that although the head, through the brain, cannot make the general arrangement and shape of the body different from what they are, yet it may, and does, determine the vigour and rate of growth of the body. It may stunt growth, and even induce premature decay. The relation of the head and body to one another must, in fact, be such that the body may freely and fully develop, otherwise the head itself must decline in power from the want of nourishment which the rest of the body alone can supply to it.

And what, it may be asked, has this to do with us as miners and metallurgists? This: that in this country mining, for anything except coal, ironstone, and tin ore, has dwindled to such small proportions that it may practically be ignored, and it is mainly in our colonies that the members of this Institution are called upon to practice their profession, for the great industry of coal mining is not intended to come within its scope, and it is on materials obtained from our colonies that those metallurgists who stay at home must practice their art and science.

Facilities of Inter-communication Necessary.

In considering whether mining will pay or not the cost of transit is unquestionably the prime factor. It is, therefore, of the utmost importance to the members of this Institution that facilities for intercommunication in and with the colonies should be increased and cheapened in every way possible, and with as little delay as may be.

A country may contain great mineral wealth, the indications of which are well defined, and the localities known to many an explorer, and parts of it may be in the highest degree suitable for agricultural pursuits, yet is such a country as useless as the un-irrigated desert of Sahara now is until it be brought into touch with civilisation by railways and telegraphs, the making of the material for which alone supplies with the necessities of life hundreds of thousands of those who otherwise would be starving men and their families here at home.

All honour, then, to such men as Cecil Rhodes, who not merely realises the requirements of the times we live in, but boldly meets them, whilst our politicians at home spend the greater part of their vital energies in wrangling over the special form of "Home Rule for Ireland," unmindful that Ireland is in point of mineral wealth and suitability for agriculture and horticulture vastly inferior to our possessions across the greater seas, now, thanks to the progress due to the practical applications of science, but a few days separated from us. Of these vast countries, with their rapidly increasing populations and enormous potentialities they take but little, if any, note. In speaking thus I mean no disrespect to Irishmen, who certainly are not responsible for the geological structure of their country, and who on the field of battle have done this nation such splendid service. It is strange that even in our common language we cannot be reconciled with Ireland. We have no word to express such unity. When we would speak of English, Scotch, and Irish collectively as one nation, we have no word at our command. If we say Englishmen, the Scotch not unreasonably object that their great share in the affairs of the Empire is not recognised by this term. The Irish might also object, though for some reason or other they rarely do so. The only approach to solving the difficulty is the Americanism "Britisher," which is unacceptable to us, and this does not legitimately include the Irish.

Our Indian Policy Criticised.

To show that I have made no unfair indictment of our Government, we have but to turn to India, where the population, instead of being the virile Anglo-Saxon race, consist of the representatives of the lingering civilisation of a by-gone age. There little can be done except with the direct countenance and aid of the Home Government and its representatives. Result: 17,000 miles of railway in a vast country containing 250,000,000 inhabitants. The United States of America, with about one-fourth of this population, has ten times the extent of railways. What will such a state of things end in? Who can say? It is true some money has been spent on irrigation, but that spent with the least grudge has been on defence against attack from without. May not the attack ultimately come from within? Who shall say? 250,000,000 people, slowly breaking with their old traditions and passing to a new condition of things under the ever-watchful eye of the agitator, ready to exploit them and mould them to his ends at every turn.

In Imperial matters do we not misjudge the relative importance of things? We seem to rate their importance by their nearness to this country in actual mileage, forgetful that science is annihilating distance. Our policy has hitherto been Empirical not Imperial. Let us hope that the dawn of greater things is heralded by the attitude of two of the greatest figures on our political horizon—Lord Salisbury and Lord Rosebery.

The Imperial Institute and its Work.

Another hopeful sign of the germination of a broader Imperial policy is the formation of the Imperial Institute, due to the Prince of Wales, who has ever shown himself active and far-seeing where the good of this country and the Empire is concerned. The difficulties attending the organisation of such an Institution are very great. Let us hope that the well-known powers of its secretary, Sir Frederick Abel, himself an accomplished metallurgist, and the assistance rendered by so many of the leading men of the day, will give such results as were foreshadowed at its inauguration. As a sign of the times it may be noted that the social side has not been neglected in the plans of the Imperial Institute. It is, indeed, only by bringing men together that they come to know, understand, and appreciate one another. Asperities and ill-feeling are softened down, and harmony and good-feeling result, which are more important factors in the progress of a community than all the legislative measures ever devised. And this is one of the prime objects of our own institution: Goodfellowship. If only we can accomplish this, much will follow.

We have seen that the iron and steel industries have their Institute, and the coal industry has many scattered throughout the country; but now, with great advantage to all, united for the purpose of publication under the title of the Federated Institution of Mining Engineers.

Perhaps, inspired by the example of an older and greater institution, which has, on more than one occasion, been oblivious of the fact that it has already well-defined and important duties to perform, the Federated Institute of Mining Engineers has overstepped the bounds of its legitimate sphere—all that appertains to coal and coal mining—to endeavour to attract to itself papers which come within the special province of the Institution of Mining and Metallurgy. I would respectfully submit that there is ample work for all, and that the objects which naturally centre in each institution would be better served by each confining its attention to its own.

The Institution of Mining and Metallurgy.

Mining engineers and metallurgists in this country, other than those dealing with coal and iron, had not, until the Institution of

Mining and Metallurgy was established, a central institution to promote their interests; not that it was not wanted as much as others, but that there were greater difficulties to be overcome. Those who would be its members are scattered over the face of the earth in pursuit of their calling, and are rarely here together, as is the case with those just referred to. It was, therefore, much more difficult to get any united action. We have seen that increasing competition, and the instinct of self preservation aroused thereby instigated the iron and steel industries to action. It will throw some light on the point we are considering if we examine the position of the other metallurgical industries. We shall then, perhaps, be in a position to understand how it is that we have not, say, Lord Swansea as our President to-day, when we find that the Iron and Steel Institute numbered amongst its earliest adherents most of the well known manufacturers; in fact, within a short time of its starting, I question if there were any of importance not on its rolls. Yes, I doubt if amongst our own members we have to-day one single manufacturing metallurgist. They have remained untouched till now by that vitalising and invigorating influence—severe competition. In fancied security they slumber at the wheel, whilst the ship draws slowly but surely to the rocks. The ores of copper, lead, silver, zinc, bismuth, antimony, nickel, and cobalt are practically nearly non-existent in this country. They are imported from all parts of the world, often as ballast, when there is no other return cargo.

America's Mineral Resources.

Those who mine these ores are much at the mercy of the buyers, who, being few in number, combine together and regulate the market for their own ends. The "ring" which encompasses their interests is cunningly devised, and there is little fear of its being broken through from within or without by any one at home, but a rude awakening is preparing for those who continue to slumber. Outside the charmed circle a great power has arisen and developed with the rapid and elastic step of vigorous youth and this power. I refer to the United States of America, which possesses within its bounds extraordinary mineral wealth is destined to eclipse the Old World in matters metallurgical. In America the mining engineers were some of the first to join together under the title of the American Institute of Mining Engineers for mutual assistance and support. They knew they had all the world to fight, and they went the right way about it, spurred on by competition rather than deterred. Their institution came into existence 23 years ago—only two years after our Iron and Steel Institute, before which, be it noted, they had formed an Iron and Steel Association of their own.

The American Institute.

The American Institute contains manufacturers, engineers, metallurgists, all working to a common end. They hold meetings in different parts of America, they have met in Canada, and a large body of their members recently visited Europe. In fact, they work on the same lines as our Iron and Steel Institute, but include both the work it does, and that which we have set ourselves to do. It is a great institution, admirably managed, and the extraordinary progress which America has made in the last 20 years in metallurgy and mining, is in no small degree due to its influence and that of *The Engineering and Mining Journal*, which has worked side by side with it. The spirited policy of this latter journal cannot be too greatly praised or its example too soon followed. The new departure it has made in publishing an annual volume entitled "The Mineral Industry, its Statistics, Technology, and Trade," in which the mineral statistics for the whole world are accurately given us, within a short time after the close of the year is a condition of things quite unprecedented. Their enterprise in publishing this volume, which also details up to date the progress made in all branches of metallurgy and mining, is worthy of the fullest recognition and encouragement. It is also from the hands of the United States of America that we have recently received books on copper, lead, and iron and steel of the greatest practical value. Mr. H. M. Howe's first volume on "The Manufacture of Steel," is a work any nation would be very proud of. It far surpasses anything of the kind yet published, both in scientific merit and practical value.

What Americans will probably do.

The amount of money expended by Great Britain in mining and the extraction of metals all over the world has been simply stupendous. It may, however, safely be asserted that, in the near future, the Americans will engineer and finance all their more important undertakings themselves; they are doing so to a very considerable extent already, and the available wealth of their country is increasing very rapidly. They are even now competing with us in the supply of mining and metallurgical plant in our own colonies and South America, and the time is coming when, with the development of their shipping, marked signs of which are apparent, we shall find ourselves engaged in a hard struggle for the carrying trade of the world, which has so long been ours that we have grown to look upon it as our birthright, which it would be sacrilege to rob us of. Then will much of the mineral wealth which has hitherto gravitated to us go to feed the furnaces of the rapidly growing establishments of the United States.

Yet these things need not come to pass if we would but hasten to consolidate the Empire, and work together with one aim and object—to remain the Greatest Power on Earth.

Notwithstanding that the City of London, the financial capital of the world, has supplied the means for most great mineral undertakings, there has been no adequate co-operation amongst those concerned to protect and control their interests. Such duties might be expected to devolve upon the London Chamber of Commerce. That they are not unaware of their responsibilities is evidenced by the fact that they have a section for mining, but this section exists only in name—a paralysed and lifeless limb, much requiring to be galvanised into activity. Will it continue to sleep the sleep akin to death till the interests it was created to serve suffer irretrievable decay?

Their great mineral wealth and the compactness of the country give the United States a considerable advantage over us in the education of metallurgical and mining engineers. Everything is in touch there, and money is freely spent on education. In this, as in other matters I have referred to, they are fast leaving us behind, and we must expect to find their engineers competing with our own in fields which should be occupied by ours alone. Are not the most important nickel mines at Sudbury, Canada, owned and worked by Americans, and many iron mines, too? And may not a great mining financial centre arise in New York in competition with our own?

An Earnest Hope.

All these things may come to pass, and more; yet it need not be, if we will but arouse ourselves before it is too late. In administration, our watchword must be organise, organise, organise; and in education, endow, endow, endow. In the same way was it that the Institution of Civil Engineers exerted a great and beneficial influence on those following that profession; so should the Institution of Mining and Metallurgy in its own special sphere of action do incalculable good. It is my earnest hope and belief that the Institution of Mining and Metallurgy will in the coming struggle give to our profession that strength and support which alone results from a firm union of hearts and minds.

It is given to few to speak with the polished diction of our late President, whose address has been happily described as "luminous." If light there be in my address to you to-night, it is rather the phosphorescent glow which sometimes results from the stirring up of stagnant waters. May the rising tide of public opinion sweep all stagnation before it, and the prosperity of the British Empire, with which our interests are co-extensive, flow on unimpeded in ever increasing volume down through all time. (Loud applause.)

Mr. VAUTIN said it was very seldom that the members of any institution were favoured with such an instructive and clever address as the one which they had just heard. (Applause.) He begged to move a most hearty vote of thanks to the speaker, and he thought they had every reason to congratulate themselves that the choice of a new President had fallen upon Professor Huntington. (Cheers.)

Mr. J. B. HANWAY most heartily supported the vote of thanks for

the business-like and laud address they had had from the new President. The remarks which he had made as to the importance of maintaining the Empire were vital in their bearing upon such an industry as mining. The allusion which the new President had made to the need for enlarging the sphere of the Institutions' work was a very happy one. When one had conducted a research in the domain of inorganic chemistry, one might describe the actual scientific results to the chemical society, but there was no society to which the practical results could be communicated, and before the foundation of the Institution there had been no audience before which one could go into such details.

The vote was carried by acclamation, and Professor HUNTINGTON briefly acknowledged it.

Mr. PERCIVAL FOWLER thought the members ought to give to Mr. Seymour their most hearty thanks—(applause)—for the work, time, and trouble he had devoted to the interests of the Institution. The present prosperity of the Institution was undoubtedly largely due to his efforts. (Applause.)

Mr. J. H. COLLINS had the greatest pleasure in seconding the motion. The note of harmony and goodfellowship which Mr. Seymour had struck should undoubtedly be the dominating note in their proceedings. (Applause.)

The vote was carried by acclamation.

Mr. SEYMOUR, in returning thanks, said he had taken a great interest in the Institution, which at one period had threatened to be received as a foundling, owing to the want of legitimate parents. (Laughter.) Such a stigma had long been removed, and he felt sure there was a vigorous and successful future awaiting it. (Applause.)

The proceedings then terminated.

MINING IN CORNWALL

AND DEVON: NOTES ON WESTERN MINING, EDITORIAL AND OTHERWISE.

THERE is no mistaking the fact that a much more healthy tone is prevalent alike in the tin and share markets than at the beginning of the month, and that not merely prospects but actual conditions are improving. There is seen in every direction, and particularly in a most satisfactory way, a rise of prices which, if not substantial, is at least assured. And what is equal to the purpose, for once in a way it really seems as if the intervention of the Easter holidays—exceptionally early as they are this year—will not have any hindrant effect. In fact, it looks at present as if the temporary cessation will only result in a more rapid impulse.

THE move at Carn Brea is a good one. It is essentially putting the slimes on tribute, the mine running no risk, and receiving a direct return for the tin saved by the contractor—Captain S. Williams, of Redruth—from the leavings. Thus, so far as the adventurers are concerned, it is all profit and no trouble or outlay, save that of keeping the accounts of the return and sales. In all common honesty, as the producers, the miners ought to have a percentage, or something in the way of dues, on the stuff that is saved from the "red rivers," but the answer then no doubt would be that if the miners managed to waste their leavings they must take the consequences. And assuredly it is far better that the mines, where they can—as, in this instance, at Carn Brea—should keep the game in their own hands. No doubt there is a point at which the extraction of the "remainder tin" out of the leavings would cost more than it would be worth; but we do not think that anyone who really knows anything of the present dressing systems will say that that point has yet been reached. Indeed, it has been notorious that when tin was fetching a good price, the chief "red river" has practically been worked again and again all through its length, and that even then were profits to be made—humble, it is true, on the seashore.

Now, if anyone attempts to work the old stream tin ground that was dealt with by the "old men," whether in Cornwall or Devon, he will get no such results as these. The writer has again and again hunted in vain for a trace of stanniferous matter where the traces of ancient workings have been most extensive. But this comes of two causes. All the old stream ground has been worked and reworked. And, more important still, the particles of tin ore in the natural stream works are very different from those contained in the modern slimes. They are coarser and heavier and more easily caught, whereas stamping reduces the finer tin ore to little other than an impalpable powder, which has to be handled very tenderly to cause the forces of gravity to bear on such individually impalpable material; and this brings us to what is, after all, the most practical question in this connection. Cannot there be a more distinctive system of classification adopted at the stamps? Every grain of tin ore is brought down more finely than is absolutely necessary results in a double loss—a loss of power and a loss of material. And the hint may very well be thrown out whether there might not be a wider range of adaptation in stamping operations, not only to varying quality of different lodes, but to the varying conditions of parts of the same lode.

KILLFRETHER account is another very cheering item in the week's proceedings. The 3s. dividend is, of course, just what was anticipated; but the report on the condition and prospects of the concern was even better than was looked for. We pointed out a few weeks since the very encouraging fact that most of the mines were looking extremely well, and we are glad to say that since then there has been no falling off in this particular. Indeed, quite the contrary, for taking matters all round, it is really years since the mines of West Cornwall generally looked better than they do now. And the very few mines in the West elsewhere seem in no way behind.

THE pinch of the mining depression has been, and still is, severely felt in the vicinity of Camborne and Redruth, and especially in the lack of employment, while wages in many cases are unavoidably very low. Adventurers generally are too tightly pinched themselves to be able to do anything to mend matters. They have to pay what they can, not what they would, and many a man is taking his chance of what he can get on tribute on the principle that a quarter-loaf is better than no bread. It is a very fortunate thing that the winter is passing away, and that a stay has been put for a while to the returns from abroad, though remittances thence are well-nigh as slack as ever.

MANY of our readers will be glad to hear that the great authority on metallurgy, Geheimer Bergrath Professor Bruno Kurl, of Berlin, so well known among mining men all over the globe through his various books and periodicals—whose uninterrupted scientific career dates back to 1846—celebrates his 70th birthday on the 24th inst., in the full possession of good health, and still exercising his eminent capacity as an instructor in the Prussian Mining Academy of Berlin.

SIDE LIGHTS ON THE LAW:

Legal Jottings on Cases in the Courts, and on Questions affecting Mining, Railway, Financial, Industrial, and allied Interests.

BY 'A BARRISTER.

THE order made by consent in the Court of Appeal on Tuesday last for the public examination of the former directors of the New Zealand Loan and Mercantile Agency Company (Limited), now in the course of liquidation, amongst whom are two Privy Counsellors—the Right Hon. A. J. Mundella, the President of the Board of Trade; and the Right Hon. Sir James Ferguson—as well as Sir John Gorst, Sir George Russell, and others, will attract special public attention to the provisions of Section 8 of the Companies (Winding-up) Act, 1890. As is well known, Section 115 of the Companies Act of 1862 gave the Court power, in a winding up, to summon for the purposes of private examination any person whom the Court deemed capable of giving information concerning the trade, dealings, estate, and effects of the company, but the evidence given on such examination, although kept on the files of proceedings, was not as a rule accessible to any person other than the official liquidator, as Mr. Justice Vaughan Williams points out. The Winding-up Act of 1890, however, requires the Official Receiver to make a preliminary report, after receipt of the statement of the company's affairs, as to the amount of the capital, assets, and liabilities, the cause of failure, and whether a further enquiry is desirable as to the promotion, formation, or failure of the company, or the conduct of its business. He may also make a further report "stating the manner in which the company was formed, and whether, in his opinion, any fraud had been committed by any person in the formation or promotion of the company, or by any director or other officer of the company in relation to the company since the formation thereof, and any other matters which, in his opinion, it is desirable to bring to the notice of the Court," and the Court may, after consideration of any such report, direct that any person who has taken any part in the promotion or formation of the company, or has been a director or officer thereof, shall attend and be publicly examined. Under this power Mr. Justice Vaughan Williams made an order for the public examination of the gentlemen above-mentioned; but as the Official Receiver had not in his "further report" expressed his opinion, as required in so many words by the Section, that any fraud had been committed, but had set out certain facts, from which he left it to the Court to draw the inference that fraud had been committed, the directors naturally objected to an order which could, by the terms of the Act, only be made in such a case as when such an opinion was expressed. Sir Henry James, who appeared for the directors, said it carried inferentially the stigma attaching to such a finding. The result was that the directors appealed to the Court of Appeal from the order of Mr. Justice Vaughan Williams, made last Monday, for their examination, and on Tuesday the Court of Appeal, by consent of both parties, discharged the order of Mr. Justice Williams, and ordered the examination to take place as if it was made under Section 8 of the Act.

It is a matter for regret that the Court of Appeal did not decide in this case, once and for all, what the Official Receiver's duty is in making the report. The words of the Statute seem sufficiently clear that it is his duty to express his opinion as to a fraud having been committed, and although it is true that it is necessary for the facts on which that opinion is expressed to be stated, in order that the Court may know whether the opinion is well founded, there does not seem sufficient reason for the Courts in interpreting the Statute to go away from the plain words of the Section. This case exhibits another illustration of the difficulties caused by what is known as judge-made law—that is to say, a series of decisions interpreting Statutes which become binding on the Courts, so that the artificial sense thus placed on them is followed, rather than that which would seem to be their obvious signification. In his judgment, delivered last Monday, Mr. Justice Williams says that the opinion of the Official Receiver that there are facts upon which it is right that the Court should exercise its discretion is sufficiently stated by his making his further report, and applying therein for an order directing the public examination of the parties whose names appear in the schedule. He proceeds to cite cases which prove that it is not necessary that the report need show that the persons ordered to be examined have been guilty of fraud, and he also mentioned notably, "Re Great Kruger Gold Mining Company," and the "Re Trust and Investment Corporation of South Africa," to substantiate the view that although the Act says the Official Receiver shall state his opinion, it is not necessary that he should do so. Now those decisions reported in Law Reports (3), Chancery Division, at pages 307 and 332, and the further cases of "In re Laxon and Co.," Law Reports (1), Chancery, page 210, and "In re Birkdale Steam Laundry," Law Reports (2), Queen's Bench, page 390, are worth the layman's while to look at, if he is interested in seeing how the judges explain away not only an Act of Parliament, but also their own decisions. The first held that the Official Receiver must state his opinion in his report; then came the next, also by the Court of Appeal, that it was sufficient if the report showed, though it did not in express terms state, his opinion that a fraud had been committed. In that case the Official Receiver did not in so many words say that in his opinion a fraud had been committed, yet the Court of Appeal made an order, and in a subsequent case of Laxon and Co., Mr. Justice Williams said:—I infer from this that the Court of Appeal did not mean that the Official Receiver need in his report say in terms that, in his opinion, a fraud had been committed; but it is sufficient if the report suggest fraud, and this state of the law was followed by Mr. Justice Cave and Mr. Justice Wright in the Birkdale Steam Laundry case, the latter learned judge, stated that he should not, without assistance, have been able to say that this conclusion was consistent with the judgments of the Court of Appeal. To most laymen it will seem a pity that when the Legislature has, in so many words, required the Official Receiver to "state" whether, in his opinion, any fraud has been committed, the Courts should go to the trouble of explaining that he need not "state" if he "shows" what his opinion is. One would have thought the most direct and simplest way was for the officer to show his opinion by stating it, and not to place an *ex parte* statement of facts which must necessarily be incomplete before the Court, leaving the Court to draw an inference of fraud. A man may, by the arrangement and selection of such facts, often convey unintentionally an opinion which he not only dares not express, but does not entertain.

The bar of England is often cited as the oldest existing Trades' Union in the country. It is said that a circle of barristers, who now attend the Central Criminal Court Sessions, are determined to put the powers of the right of combination to a test in order to exclude those outside their circle from certain benefits, which have hitherto been open to such of the bar

as have chosen to seek them. Were it not for the fact that at the Old Bailey criminal trials of the greatest importance are accustomed to be tried, and the public have been used to look to the bar of that Sessions for the purpose of securing the ablest men at the criminal bar (due to the circumstance that it has hitherto been a sessions open for the whole bar of England to attend) the matter would have been of little importance outside the barristers immediately affected. But on occasions it is of no little public importance that a bar should exist familiar with all the technicalities peculiar to that branch of legal practice, and that that bar should be open to the ablest men to attend there and qualify for the time when their services may be required. By a recent combination that has taken place among some of those barristers who have in recent years attended at those sessions, what is termed a mess has been formed, which has claimed the right to have divided amongst themselves the briefs in all cases which come for trial to the Sessions, in which the prosecutor has not gone to the expense of instructing a solicitor and counsel. This right has, it seems, been conceded, with the result that several barristers who have been in the habit of attending these Sessions from time to time find that not having joined the mess they are now excluded from practice there unless privately instructed, and cannot get within the charmed circle. An appeal to the Attorney-General, or the judges is talked of, but whether either have any jurisdiction in the matter is not clear. If this action of the Old Bailey circle is allowed to stand, no doubt the public will soon find that they cannot take an outside barrister there except under the penalty of having to pay him a special fee. Parliament has, of late, somewhat interfered with the privileges of the law officers, and the bar should beware lest they escape not legislation.

REVIEWS.

MINING LITERATURE.

A Handbook of Gold Milling. By Henry Louis, M.E., F.G.S. (London: Macmillan and Co.)

The literature of mining has received considerable and valuable additions during the past few months, and although very little of what is new can be said of the subject in general, yet the ground to be covered is so vast that there is still room left for new books treating of special departments.

In gold mining alone, which after all is but a branch of mining, the services of specialists are required, for although in old times, and in shallow mines, it was possible for the same man to control, more or less effectively, the operations both in the mine and the mill, yet now the latter alone will absorb of itself the energies of a skilful man, and call forth the exercise of all his knowledge and experience in the difficult matters of the amalgamation of free milling ores, and the classification, concentration, and chemical treatment of refractory ores.

A book devoted especially to these subjects will be welcomed by all mill men, and this need has been supplied by Mr. Louis in the book under notice. It is, we believe, the first book addressed exclusively to the engineer in charge of a gold mill, and is of especial interest to him, as it treats solely of matters connected with his department.

Mr. Louis commences with a description of the chemical and physical properties of gold and mercury, a knowledge of the latter being essential to an "amalgamator." He then proceeds to describe the machinery of a gold mill in detail, and after treating of the amalgamation of free milling ores, tackles the refractory ores, and after classifying and concentrating them in the most improved style, robs them of their gold by chemical processes, and does not finally quit them until the bullion has been assayed.

The general tone of the book would lead us to suppose that the author writes from personal acquaintance with his subject. In dealing with the all important question of crushing the ore, he rightly gives a minute description of the modern stamp battery, which after all is the best all-round machine for the work. The numerous patent pulverising mills, for which the inventors claim so much, and most of which never come into practical use are, with one or two exceptions, practically unnoticed in this book, and we quite agree with the author when he says that "the whole of this part of the subject may be summed up in the remark that it is easy to quote instances where one of the above-named machines has been replaced by gravitation stamps, but there are very few cases where the stamp has been discarded in favour of its competitors in gold milling."

The book, as a whole, so well fulfils its purpose that we hesitate to mention a portion in which, in our opinion, the cart has been put before the horse. We refer to Chapter XL, in which the principles of concentration and the appliances used are described before the all-essential preliminary process of sizing and classification. From our point of view successful concentration is impossible without the previous systematic classification of the pulp. The more this matter is insisted upon and vigorously enforced the better will be the results to all concerned. We use the words "vigorously enforced" because, from experience, we know that the average rule of thumb millmen cannot get out of the beaten track unless he is compelled to do so by a will stronger than his own. Many men, indeed, who follow this occupation know as little of the theory and practice of concentration as a cat does of side pockets. The plainest and most convincing language must be used in order to educate them, and it is, perhaps, in this direction that we find the author at fault.

The treatment of concentrates, when obtained, is the subject of some instructive remarks by Mr. Louis, who, after describing the appliances used in pan amalgamation, roasting, chlorination, and smelting, passes on to a full and detailed account of the cyanide process, which has been so instrumental in recovering the large quantities of gold formerly thrown away in the tailings of South African mines.

Here we strike upon what is practically new ground, and we do not recollect having read a chapter containing so much practical information relating to the working of this process, its cost, and the results obtained.

The plant required for the cyanide process consists principally of wooden leaching vats, precipitation tanks, and the iron pumps necessary for circulating the solutions. Roughly, the cost of a plant capable of treating 6000 tons per month is, according to the author, £8000, while the cost of treatment per ton at the works of the Langlaagte Company is 5s. 9d., or an amount of 24,000 tons per month, the percentage of gold recovered being 84 per cent.

Having caught his hare in the shape of gold amalgam on the plate, or precipitated gold from the chlorination or cyanidation works, the author next proceeds to cook it, and gives in Chapter XIII, very full and practical instructions as to the clean up of a mill, the retorting of the amalgam, and the melting of the sponge gold into ingots. The process of milling is thus brought to a successful termination, and we are next called upon to consider the all important question of cost. This is gone into very fully, instances being given of the actual cost per ton in the various

mining districts of the world, and the causes of variation fully explained.

Briefly these are: the nature of the ore, power available, labour, size of mill, and situation. As an example of how the milling cost is affected by the above, it will be sufficient to point out that in the Transvaal, at the Sheba Mine, with water-power the amount is 10s. 2-52d., while at Block B Langlaagte Estate Gold Mining Company, it is only 3s. 3-30d. with steam.

The tabular statements prepared, showing the detailed costs at all the well-known mines in the world, will be found of great utility to the engineer called upon to make an estimate, while a little further on he will find details of the labour required in a mill, the cost of machinery and erection, the power necessary, and other details.

Considering the recent developments in electricity as a motive power, and its application as such to mining machinery, we are surprised that the author should only devote a page to the subject; though we hope that in future editions this will be rectified.

The last chapter of the book treats of the sampling and assaying of gold ores, tailings, and bullion, and is a fitting termination to a book which is rightly named a "Handbook of Gold Milling." As such, it is a valuable companion, and should be found on the shelves not only of the man in charge of the mill, but also of the student and mining engineer.

THE CHAIRMAN'S FRIEND.

The Chairman's Handbook. By Sir Reginald F. D. Palgrave, K.C.B. (London: Sampson Low, Marston and Co.) Tenth edition, revised.

Not the least qualification befitting one to be the Chairman of a public company is to know how to rule and guide a meeting. To the discomfort and misfortune of many, but a few can lay claim to this accomplishment. They do not even possess the intelligence and common sense to conceal this defect, but go blundering on, encountering obstacles and storms which they themselves are alone responsible for, until we are landed quite into chaos, from which we are extricated gratefully by some otherwise unfortunate individual who, amidst it all, has retained his presence of mind. Chosen too frequently for their titles, and not for their business and mental attributes—what a simple bait will attract the easily deluded investor!—they cannot exhibit assumed intelligence, which could call forth our admiration, though not respect. It is one of the trials of a reporter's life to have his time inconsiderately wasted, his temper sorely tried, and his patience cruelly taxed by such incompetent persons. We have, ourselves, experienced it time after time. We have felt an uncontrollable desire to philanthropically take the guidance of the meeting, or to advise the bewildered president in a friendly way over the Press table how such and such a course, or such a judicious remark would expedite and clear matters, and avoid the impending storm. Such advice—if we could depend upon it being taken in the spirit in which it would be given—would be on such occasions invaluable; would relieve the Chairman himself of burdens with which he is unwillingly weighted; would hush the expressions of disrespect which are excusably hurled at him; and would remove the annoyance to which he is otherwise subjected by the revelations of criticisable defects. As such public advice is inappreciable and impossible, it is well for him—if his vanity will not allow him to scorn it—that he can learn in his private study, away from the eye of a critical audience, the information of which he is so lamentably in need. This handbook might be studied by him with the greatest advantage. If he does not post himself up with the affairs of the company, his speeches can be written for him by his able subordinates, but at a public meeting these latter have to conceal their knowledge in silence, whilst the Chairman alone shines by the borrowed light of those whom his august presence and assumption hide in the shade. It is at such times he becomes so impressed by his own importance: his "ego" presents itself before him with so forcible and bold an outline, that he at length loses himself in a maze of forgotten—rather, lately acquired—facts, until his hearers begin to wonder where he will take them at last. If such a book as this could not impart humility, it might, at any rate, make him self-respectful. More surely than inappreciable advice it might teach him the error of his ways, and, from these points of view, we humbly suggest that such a book would be to him an invaluable counsellor and friend.

THE ENGINEERING MAGAZINE.

The March number of this exceedingly artistic and readable magazine is, like its predecessors, greatly interesting. It contains the following articles:—"The World's Fair Buildings through French Spectacles," by Jacques Harnant; "Ships of the New British Navy" (illustrated), by William L. Clowes; "How the Ancients Moved Heavy Masses" II (illustrated), by W. F. Darfee; "A Plea for Series Electric Traction" (illustrated), by N. W. Perry; "City Water Supplies of the Future," by Samuel McElroy; "Florida's Great Phosphate Industry" (illustrated), by Alfred Allen; "The Proposed Cables under the Pacific" (illustrated), by Herbert Laws Webb; "Precautionary Hints for Inventors," by Frank Richards; "American Practice in Silver-Lead Smelting" (illustrated), by Walter Renton Ingalls; and "The Tehuantepec Isthmus Railway," by Señor Don Mathias Romero.

SOUTH WALES COAL TRADE.—A new seam of coal was struck on Saturday in the Garth Mountain, Pentreoch, and the announcement of the discovery has caused the greatest excitement and rejoicing in the surrounding district (including Gwelodysgarth, Taff's Well, and Tongwynlais), which has for years been suffering from the gradual abandonment of once flourishing industries. It has long been suspected that a good seam of coal existed in the vicinity, but hitherto all attempts to find it in a position to be remuneratively developed have ended in disastrous failures. Three weeks ago, however, one more attempt was made by a limited company, known as the Barry-Llantwit Coal, Stone, and Clay Company. Operations were carried on under the superintendence of Mr. Ockwell Hawkins, late manager of the Treheris Deep Navigation Colliery, and on Saturday the efforts made were crowned with success, for the seam was struck at a point 21 yards from daylight, and two trams of the mineral were brought out. The seam, which is 4 feet 6 inches thick, has been identified as the No. 2 Rhonda or the Rock Vawr seam. The coal is declared to be of excellent bituminous quality. When the workings are opened out employment will be found for fully 500 men. There is also on the taking a good paving stone quarry, which has been proved for a depth of 120 yards, and this also will be opened out as soon as possible.—*South Wales Daily News.*

THE CHITTORGH AND ODEYPORE RAILWAY.—The Governor-General's Agent in Rajputana recently turned the first sod of the railway from Chittore to Odeypore. The enterprise was first resolved upon at least 11 years ago. The line, which is about 60 miles long, will bring a country, for the most part rich and well cultivated, into communication with markets from which it has hitherto been shut out, and there is every reason to believe that the Maharana will get a good return upon his outlay. The pilgrim traffic to and from the great temple of Nathdwara will be an important source of revenue.

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LONDON: MARCH 24, 1894.

THE COST OF GOLD MINING.

THERE has been of late a noticeable improvement in gold
mining enterprise, and this improvement is likely to grow
stronger with the recovery that seems imminent in the
general condition of finance. Apart altogether from the Rand
mines and the West Australian "boom," there is observable an
increased attention to auriferous deposits in India, British
Guiana, the United States, Canada, and other parts of the
world. If this movement is the outcome of the general influence
of more prosperous times, or, at least, of a greater degree of
hopefulness in the future, it is also due to the progress which
has been made in the technical branches of the gold mining in-
dustry. It is seen that the advances achieved in the economical
working of mines, the saving of labour costs, and the securing
of nearly the whole content of gold from low grade and re-
fractory ores have given quite a new aspect to quartz mining
as a medium for investment. A considerable proportion of the
increased out-turn of the precious metal in Victoria, New South

Wales, and the United States is in no way due to the discovery
of deposits hitherto unknown, but is entirely explained by the
application of more economical processes. Though scientific
management cannot escape from the consequences of a hopelessly
poor mine, or a ridiculously heavy price, the results recently
achieved have rendered it impossible for shareholders to accept
even what was formerly an exceedingly low proportion of gold
as an excuse for failure. The fact that British mining
engineers and metallurgists are recognising this is very encour-
aging for mining enterprise. They are now convinced that the
employment of economical methods is of greater importance to
the success of gold mining than a mere dependence upon the
chance of finding rich deposits of auriferous quartz. Whether
they have to deal with low grade ore, or quartz in which there is a
heavy percentage of gold, the results are practically the same; and
if the companies themselves are unable to cope effectively with
the vast amount of "dirt" that passes through the stamps, the
residue is successfully treated by those concerns that extract by
chemical means the last pennyweight of gold from the tailings.
Notwithstanding this saving of metal that formerly went to
waste, it does not seem as if finality has yet been reached, and
the process of invention as applied to gold mining is likely to
continue to extend. We hear at the present moment of several
new methods of ore treatment as to which particulars are not
yet available, but most encouraging prophecies are ventured as
to the influence which they are likely to have upon gold mining
in the future. Chemists and machinists all over the world are
applying their ingenuity to the question of still further reducing
the cost of gold extraction, and the result is certain to be an
enormous augmentation in the output of the precious metal.
Apart from new processes for the treatment of ore, a great deal
of economy has been effected in working cost by the labour-
saving facilities afforded by the application of electricity to
pumping, hauling, lighting, transport, and driving, though this
power is, unfortunately, restricted by the absence of water in
many of the most prolific gold fields. It is, indeed, a strange
irony of fate that, broadly speaking, the difficulties of working
arising out of a scarcity of water and imperfect transport facili-
ties are in proportion to the richness of the auriferous territory.
Upon the other hand, some compensation is afforded in the im-
provements to air compressors and to rock drills which are doing
much to make this branch of mining more profitable.

The attention of the mining inventor has for a long time past
been concentrated upon the extraction of more gold from the
amalgam and the tailings, and we have had a nearly complete
cessation of the argument whether the stamp battery was not a
wasteful and inefficient mode of crushing the ore. The labour
saving appliances which have been adopted for the stamp battery
are so numerous that a gold mill is now as nearly as possible self-
acting. With this arrival at something like perfection the old
argument about whether the traditional "stamps" can be con-
sidered the proper form of apparatus to crush gold has again
come to the front. We hear again of "Huntingdon"
mills and Krom rolls being ordered for gold mining companies,
though it must be admitted that the stamps still occupy a posi-
tion of unquestionable supremacy. Why this should be the case it
is difficult to explain from a theoretical standpoint, but practice,
which is presumably the best guide in the matter, seems to be
all on the side of the stamp battery. As to subsequent chemical
treatment, the cyanide process has undoubtedly secured an un-
assailable position. The law suit, which is now pending in the
Transvaal, as to whether the McARTHUR-FORRESTER patents are
really valid, is a very important event in connection with this
question of the cost of working gold mines, inasmuch as the
abolition of the royalty would follow upon a decision
adverse to the Gold Recovery Company. The long
dispute between chemists and mining machinery engi-
neers, as to their respective methods of gold extraction, seems
now to have resulted in a compromise. Makers of stamp
batteries certainly at first seemed to have a very strong argument
in favour of the mechanical treatment of the quartz, and in this
they have been supported by the mining companies themselves,
who show no inclination to dispense in any way with the stamps.
For some time the mining companies looked with disfavour upon
the cyanide method of treating ore, and were inclined to regard it
as a new-fangled invention that would not stand the test of
actual work. But the results have been so convincing that, as
the scope of gold mining increases, the chemical processes are
extending quite as rapidly as the machinery plants. There is no
likelihood, however, of the two methods coming into competition
yet awhile, as it is found much more profitable to use the cyanide
process in connection with the stamp batteries than to depend
entirely either upon the one or the other. The cyanide process
seems, therefore, destined to occupy a very important position
in the economy of gold mining, without, at the same time, sup-
planting to any appreciable extent the mechanical plants.
Apart from the cyanide process there are many attempts being
made to secure a larger return of gold, and to obtain a further
reduction of working expenses. The DAUNREAS process, of
which little is known at present, has this much in its favour—
that it has attracted a large amount of capital to its practical
exploitation. The THWAITES-DEVY system, which rather strives
to apply to gold extraction experience gained in connection with
other metals, is to be tried on a large scale on a typical
"banket" reef. Promising results in experimental working
have been secured by the BARTON process, and
though it has not, so far, answered well in actual
practice, even those who have suffered from its failures
continue to believe in it. The POLLOCK process is another which
has created much interest, and one could go on at much greater
length recapitulating the various systems of extracting the
largest possible proportion of the metal from pyritic and other
ores. Most of these inventions have undoubtedly something in
them, and whatever may be their individual peculiarities, there
can be no question as to the advance which, as a body, they
represent in the treatment of auriferous ores.

MYSORE AND NUNDYDROOG.

AS we foreshadowed last week, the shareholders in these two important concerns have fully recognised the difficulties which have beset the respective directorates during the past year, and sympathetically and philosophically regard the present position of affairs. That one or two thought fit to cavil at and unjustly criticise the efforts of the directors was to be expected. They gave expression to their little grievances; they were listened to with sufficient patience; they received polite and deferential answer; and they were forgotten. One of the conspicuous and unappreciated features of an annual gathering is the severe and unbridled criticism of the small shareholder. He it is who endeavours to depreciate the property of those who have more at stake; who loves to air his mean and oft-times ungenerous and unfounded grievances; and who raises the ire of those who place a great value upon the time which he chooses to waste. He is in the completest sense of the word a bore, for he very rarely utters anything worth listening to, whilst the very manner of his discourse, his impolite and unguarded statements cannot call forth respect.

Fortunately, the Mysore and Nundydroog Companies are freer and less hampered by such (?) critics than many others. Evidence of this was furnished somewhat at the respective meetings this week. As we have already said, the shareholders, as a whole, are satisfied with the results of the past year's working. They acknowledge that the directors have done all in their power on their behalf, and, in sympathising with them, they only sympathise with themselves. Sir CHARLES TENNANT and Mr. TAYLOR, at the Mysore meeting, delivered speeches which left no loophole for criticism. They explained away the many circumstances which shareholders looked upon before as discouraging, and gave utterance to facts and produced figures to prove that the future was far from unpromising. The chief circumstance which has agitated shareholders, and has likewise tended to spread absurd and unfounded rumours, is the falling-off in the yield of the ore during the latter portion of the year. It is to be regretted certainly that the ore fluctuates in value. But is this an unnatural or an exceptional thing? Is it a circumstance to cause wonder? Is it a matter for which anyone should be blamed? On the contrary, it is a law of nature which can with certainty be expected. It is the characteristic of every mine in the world. The quality of the ore is bound to fluctuate. The greatest wonder and surprise would be if it did not. Shareholders in mining companies have been taught this over and over again. They know it is an eventuality with which they must ever reckon. Then, why make the Mysore Mine an exception? The fact is, they are disappointed that the ore did not improve in value. Their desires have met with disappointment, and the latter has made them absurdly depressed and incautious. The very history of the mine should have taught them more wisdom. As Sir CHARLES TENNANT pointed out, there have always been considerable variations in the quality of the ore from year to year. So he assures us that, judging from past experience, there is no cause for anxiety. This is sensible and forcible argument; it is logic sufficient to silence any criticism. He likewise answered equally as convincingly the extraordinary rumours that have lately been afloat that the mine is worked out. He evidenced the fact—an important point, he described it—of the large quantity of ore laid open for stoping on December 31st last, viz., 74,986 tons, or 4010 tons in excess of the estimate made a year previous, notwithstanding the larger amount of extraction. "This," he truthfully remarked, "we regard as a most satisfactory feature . . . and sets at rest in a very emphatic manner the rumours that have been so freely and so unwarrantably circulated that our mine is worked out."

Captain W. BELL McTAGGART did not have so easy a task at the Nundydroog meeting. He had to explain away and make acceptable a more disappointing and depressing story. The past year has been an eventful one; it has, without mincing matters—and the directors do not hesitate to admit it—been a disappointing time. But here, as in the case of the Mysore Company, the directors have been met by ill-fortune. They have displayed praiseworthy energy, but circumstances have worked against them, and have minimised their efforts. Of course, they cannot control the quality of the quartz. That is beyond mortal skill. This has been their great trouble during the past year. The falling off in the value of ore has been considerable. This has been due, as the Chairman pointed out, to several causes, the chief of which was the comparative failure of the stope in the back of the 840 feet level. In addition to this, the lower levels of the mine, the 920 feet and the 1000 feet, have been driven to a large extent through barren ground, but these communications have had to be effected in order to open up the mine for future workings, but it so happened that they lay between two pay-shoots, and that the interval worked upon was barren. A third cause also tended to the same end, and that was the obligation to sink both Kennedy's shaft and Taylor's shaft through the country rock, instead of on the course of the lode. This means that while sinking was being proceeded with they got no material for the mill. It was all dead work. For our part we cannot see in these circumstances any cause for depression. On the contrary, there is every hope for the future. Mr. TAYLOR thinks the result of the year's working in Kennedy's mine gratifying, and as far as he can judge—and upon his judgment the greatest reliance can be placed—the shareholders will now be handsomely rewarded for the outlay they have made upon the mine. The condition of the company financially is strong. The directors are in a position to divide everything that is earned. They hope to consider the next interim dividend before many months are over; and, taking all these facts into consideration, there is every reason to look to the future hopefully.

RAND MINES, LIMITED.

THE mail has brought us this week some important information respecting the present position and future of this syndicate. The report of the annual meeting has reached us, together with that of Mr. H. C. PERKINS, the company's general manager. This syndicate, being but recently formed, is probably but little known, nevertheless it is to investors an undertaking of the most attractive kind. It was floated last year, with an authorised capital of £400,000, in £400,000 shares of £1 each. This is an insignificant capital compared with the present market value of the property, and the phenomenally rich claims in which it has an interest. Its assets consist of 1289 claims and 12 water rights, in addition to the Modderfontein farm, whilst it holds a vast number of shares in the following, at present, promising companies:—Ferreira, Wemmer, Henry Nourse, Worcester Deep Level, South Rand Deep Level, Crown Deep Level, Geldenhuis Deep Level, and the Rose Deep. Altogether, it holds interests in over 1700 deep level claims in the Witwatersrand district of the Transvaal. This is almost sufficient in itself to allow us to imagine the vast extent of the concern, and its future possibilities. Already, the news received this week has had a wonderful effect upon the market value of the shares, the £1 shares having gone up as high as £9, which makes the valuation of the property stand at no less a sum than £3,600,000. The first annual meeting of the company was held on the 22nd of last month, at which statements were delivered of the most interesting nature. The Chairman related how the company came into being; described the steady progress to prosperity of the Witwatersrand district; and the persistent manner in which disbelief in deep level properties had given way to confirmed and well-founded faith. It is, indeed—incredible as it may seem—within very recent date that deep levels were held in low esteem. For instance, when the offer of reconstruction was made to the Wemmer, Ferreira, and Worcester Deep Level Company, the value of the 31 claims and machinery, according to the then selling-price of the shares, was about £10,000. What is the price of to-day? These companies are now worth hundreds of thousands of pounds. The most striking instance of the want of appreciation is to be found in the fact that as late as 1890 between 200 and 300 claims were pegged out for the Rand Mines (Limited), and all these were located within about 3000 feet of the outcrop, and situated between the Langlaagte United to the west and the May Consolidated to the east. "That which is regarded as valueless to-day," said the Chairman, "may, in a short time, be regarded as highly valuable, and just as some years ago one would have been looked upon as a person of wild ideas had one prophesied the working of such a property as the Geldenhuis Deep, in which a shaft has now actually pierced the reefs, so in the future will enterprising persons be found sinking for reefs below your southern boundaries. Regarded by to-day's standard of value, the prices at which deep level properties were acquired appear ridiculously small, but I ask you to bear in mind these words:—By the standard of future values the prices of to-day will appear ridiculously low." We cannot look upon such an opinion as ridiculous optimism. They are very few indeed who would take exception to, or be inclined even to place a discount upon it. Mining in the Witwatersrand is, as it were, just starting upon its career. We see before it a span of life which cannot be measured by man's limited age. The belief in deep level properties is as sincere now as just recently it was absent. It was thought then that gold was to be found only upon the surface. They have since gone down to comparatively fair depths, with the result that the deeper they go the more abundant the ore becomes. We cannot scorn and disbelieve evidence which is thrust before our very eyes, and so we think the Chairman of the Rand Mines (Limited) is not giving utterance to idle prophecy or to a ridiculous forecast of future wealth.

The general manager of the company, Mr. PERKINS, has written a report which is of world-wide significance and interest. We have inserted it elsewhere in full, with the conviction that it will well repay perusal and study. It confines itself to no narrow region, nor to any isolated property. Already it has awakened in South Africa the deepest interest, and has given food for abundant controversy and speculation. By a contemporary out there it has been described as "one of the most important documents ever published in connection with the Witwatersrand, not even excepting the famous report issued by Mr. HAMILTON SMITH at a time when deep levels were practically unknown. Its conclusions are based, not upon theories, but upon the facts recent working has disclosed, and being alike pregnant in its suggestions, cautious in its promises, and courageous in its recommendations, we consider that its careful study will well repay present and intending investors in Witwatersrand securities as conveying information equally valuable from a general point of view as from that of the shareholders to which it is specially addressed." We see no reason to take exception to this high tribute. The report is fully worthy of it, as all must admit after having given it the consideration it deserves. In speaking of it the Chairman said:—"Were I to take your able manager's report, and calculate from it the amount of profit to be derived from your claims, a great many millions would result; but I refrain from doing this, for the reason that your properties are not yet entirely proved, and that although so many millions would result, I should be giving a finality to the undertaking which is in no way justified." We think sufficient has been said to convince readers of the importance of this gigantic undertaking; of its possible valuable bearing upon the future of the Randt industry, and of the intrinsic merit of Mr. PERKINS' report. They might, of course, be inclined to take exception to what has been said, not only by ourselves but by others. It is impossible, however at this time, to be sceptical as to the resources of the Randt, or to regard with absence of hope its brilliantly promising future.

NOTES AND COMMENTS.

IF anything were needed to justify the election of Professor Huntington to the Presidency of the Institute of Mining and Metallurgy, it would be found in the address which he read before Wednesday's meeting. Most of the adjective which, somewhat at random, were applied to the matter and style of the production were hardly successful in conveying a full acknowledgement of its merits. It was all that was said of it, and something more. Broadly regarded, its most interesting feature was the spirit of Imperialism which was breathed out in it. Professor Huntington appears to have recognised—what curiously enough more frequently than not escapes the eye of the mining philosopher—the close and inseparable association of the prosperity of the most historical of all industries with the extension and solidity of the British Empire. The strictures which were applied to the immovability of the English mind were in condemnation of a mental characteristic which has brought us both good and evil in balanced quantities. The particular results of it most accentuated in the Presidential address were, no doubt, instrumental in largely handicapping our industries in the race with those of other nations. It may be thought, however, that the slowness of movement is the result of a resolve to carry convictions to the utmost limit of certainty before acting upon it, and there is here some prudence which will discount, though it may not counterbalance, an occasional loss or disaster by the missing of that tide in the affairs of men which, taken at the flood, leads on to fortune. In common with the several speakers on Wednesday night, we can congratulate the Institution of Mining and Metallurgy upon the election of a President who is so eminently qualified to fulfil the duties attaching to the office. There will be a good many difficulties to overcome, but in his hands the future of the society may safely be left.

THE investor has for some time now looked with favour on the City and Suburban Company, and with reason. He knows that the company has not only done well in the past, but that there is every reason to think it will do better in the future. At the present moment it occupies a prominent position amongst successful companies, and the shareholders of the concern have every cause, therefore, for congratulations and sober rejoicing. We have received this week an account of the proceedings at the annual meeting of the company, held last month at Maritzburg. The Chairman, Mr. E. M. Greene, experienced no difficulty in making acceptable the record of work done for 1893. It speaks for itself. He had only to enumerate it, as it were, to call forth from the meeting unanimity and enthusiasm. There was no loophole for criticism or dissatisfaction, and so everything passed off quietly and harmoniously. The year 1893 has, indeed, been a prosperous one for the company. There has been here no non-fulfilment of promises and no disappointment. The Chairman modestly thought the shareholders would agree that a dividend of 100 per cent. was a very satisfactory one. During the year the earning power of the company amounted to, roughly, £172,000, and £85,000 were paid in dividends. These facts speak for themselves. The reef has continued to open out exceedingly well. The Chairman anticipates the profit will, during the coming year, amount to £8000 per month. When the battery is completed they will not only crush from the south reef and main reef leader, but will put the main reef through the battery as well.

WE are constantly receiving from all parts of the world, and from South Africa especially, evidence of the great value of the cyanide process. To it has been owing, since its inauguration, the steady and persistent progress of the Randt, with its increasing monthly outputs. The City and Suburban Mine has adopted the process, with great success. In the last eight or nine months the tailings have been treated with the result that £14,000 clear profit has been obtained from this source. The Chairman has wisely refrained from giving any forecast as to what profits will be made, or the amount of dividends likely to be paid during the coming year. What he is alone certain of is the fact that the directors will declare all the dividends of which the profits will admit. It is not his desire to make any sensational declaration of dividends, but to maintain steady ones. The board hope, however, to raise it 25 per cent. Altogether, it is quite pleasant to read the report of the company's meeting. We are getting so accustomed now to listen to tales of distress and woe, to pleadings for more capital, and to the expression of the hope deferred, that it is quite a relief—like coming from chaos into order—to peruse Mr. Greene's story of success and promise. The shareholders have expressed their approbation and satisfaction in the best way they could—and that is, from their point of view, an economical proceeding—viz., to vote to the Chairman and directors the sum of £1200. Mr. Mason, who moved the resolution, informed the meeting that were the directors voted 5 per cent. on the dividend declared, as in the majority of companies, it would have meant in this instance something like £4000. This is an exemplary arrangement, and might be adopted with advantage by other concerns. The directors could always confidently rely on the consideration of shareholders, and the latter would then have less impulse to, and would see the almost silencing delicacy of, fault-finding.

THE Elkhorn Mining Company is a distinguished exception to the rule of silver mining companies, most of which have been stranded upon the rock during the prevailing depression. A dividend of 25 per cent., with silver selling at 27d. an ounce, is an achievement worthy to rank high in the commercial annals of the City. The shareholders may find some satisfaction in setting themselves to work out a proportion sum which, if it lack something of the definiteness

and conclusiveness which are among the distinguishing characteristics of mathematical processes, is none the less stimulating to the imagination. Stated roughly, the problem would run thus—If with silver at 27d. an ounce the Elkhorn Mining Company pay a dividend of 25 per cent., what dividend will be paid by the same company if silver should rise during the ensuing 12 months to the healthier rates of past years? Whatever drawback there may be to the consolation derivable from the answer to the proposition lies in that small but important word casting doubt upon the possibility of a return to normal silver rates. Speaking at a recent meeting, the Chairman of a company, largely interested in silver, quoted an opinion to the effect that prices had not yet reached their lowest point, and that there was no immediate prospect of a rise. In weighing the opinion it should be remembered that the small but hopeful improvements recently reported had not then taken place. Had they preceded the statement, it might have been coloured with a little more optimism. At present, two things have a strong probability—one, that silver can hardly remain stationary much longer; and another, that its movement can hardly be a fall.

Whatever fluctuations may be in the future, the Elkhorn shareholders may very well contemplate the market with a smile, and give utterance to a complacent assurance of safety. Even if it be conceded that silver may go down, its fall could hardly be a sufficiently serious one to effect the dividends which are being paid even at the present time. This granted, it follows that the period of hardship may not have been without its chastening effect. It could easily be seen from the proceedings at Monday's meeting that the directors, and officers of the company under them, have risen to the occasion in a manner which testifies conclusively to their fitness for the position they at present occupy. Everything in connection with the company's management, every detail of expenditure has been passed under a most severe revision until, as the Chairman remarked, there were certain branches of the company's outlay in which he certainly would not "have the courage" to suggest any further cutting down. To those who are able to distinguish between a plausible utterance from the chair, and one which is moulded closely upon facts, Mr. Hart's speech on Monday will stand out as a thoroughly business-like and creditable statement of facts.

It is very rarely that we have evidence offered us of the gold wealth of British Guiana. Nevertheless, the information we do receive from time to time is conclusive that the gold mining industry is flourishing there, and would prophecy a productive future. In his report for 1892-3, Sir C. C. Lees, the Governor of British Guiana, speaks very encouragingly of it. He considers this district has greater possibilities than any he has ever seen. The reefs are very rich, and increase in size the deeper they get. He further states that there has already been a rush to this place; that three companies, with capital locally subscribed, have been formed to work the reefs; that others are in course of formation; and that machinery has been ordered, and will soon be at work. He adds:—"And it is the general belief of those competent to form an opinion, who have visited the various districts, that the mines of British Guiana are as rich as any in the world." This is confirmed by the *Demerara Argosy*, which publishes a comparative statement of the gold yield in 1893, compiled from returns supplied by the Department of Mines. From this statement it appears that the total yield was 142,633 ounces, distributed among the respective districts as follows:—Essequibo, 48,337 ounces; Barima, 26,700; Cuyuni, 26,476; Potaro, 25,430; Massaruni, 7145; Barama, 5644; Puruni, 2792; Grote Creek, 97; Demerara, 12; total, 142,633. Compared with those of 1892, the above returns show an increase in four districts aggregating 23,262 ounces 10 dwts. 5 grains, and a decrease of 12,352 ounces 6 dwts. 20 grains in five others, the net increase in favour of last year being, therefore, 10,910 ounces 3 dwts. 9 grains. The larger yield of 1893 was most marked in the Potaro and Cuyuni—11,173 ounces and 9645 ounces respectively—next in order being the Barama, 2278 ounces, and Puruni, 464 ounces. On the other hand, the output from the Essequibo fell short of 1892 by 6330 ounces; Barima, 2914 ounces; Massaruni, 2539 ounces; Demerara River, 378 ounces; and Grote Creek, 189 ounces.

The Government of New South Wales, in grim despair, has sounded a rallying trumpet note in its offer of a reward of £1000 for the discovery of a payable gold field. We fear this will not stimulate discovery. If there are any payable gold fields in New South Wales the mere finding of them will be a sufficient reward to prospectors, and a remarkable impulse to energetic search. There are thousands now, we doubt not, searching every nook and corner of the colony, and we fear £1000 will not plant one where they have sought diligently, nor open the eyes of those who have searched carelessly. We do not complain of this prodigality of the Government. On the contrary, we commend its generosity and the spirit which has given birth to it. We only question the wisdom of it. It is evidence, at least, of the manner in which they regard the industry out there. They attach to it the importance it deserves, and which is—to our misfortune—thoroughly unknown in this country. We would that such a spirit prevailed amongst our own legislators; that they would offer to us the facilities of which the industry stands in vital need; and, instead of being selfish and grasping, would be generous and beneficent. There is a way by which we may attain such ends, but it is a long and devious route, and needs almost superhuman patience before we are rewarded with success. Yet we have entered upon it, have progressed a little way, and have surmounted not a few imposing obstacles. We shall still journey on, and in time will no doubt meet with our reward.

We hear that the electrical plant at the Crown Reef Mine is now practically completed; that the greater part is actually

at work; and that electric pumping is being carried on from the dam to the mill reservoir. Other extensive innovations and improvements have been carried out on the property, under the direction of Mr. Hubert Davies. An electric installation is now on the property, and electric locomotives, we hear, have been run with most satisfactory results. A small electro motor works the pump for the cyanide works, and the mine pumps will shortly be started. The new mill was to start on the 1st of March, when the total crushing capacity will be increased to 180 stamps. "As this will consume some 750 tons per diem," says the *South African Mining Journal*, "and, as only one level is at present completely developed, work with the drilling plant will require to be actively pushed forward, so as to enable stoping to be carried on from several levels as soon as possible. With only a limited number of stopes available, there will always be a danger of the ore reserves proving insufficient, and although since Mr. Webber has assumed the management, good progress has been made, and, notwithstanding the fact of its being possible to shortly considerably increase the quantity of ore in sight, we are inclined to believe that it will soon be found politic to discontinue milling with the present 60 stamps, in order to give the mine a better chance of gaining upon the mill."

The annual statement of the British Iron Trade Association, on the production of iron and Bessemer steel for the past year, shows a slight reduction in the output compared with the previous year. The production for 1893 was 1,493,454 tons, and for 1892 1,500,810 tons. The Cleveland and Durham and Cumberland districts show increases, though the coal strike certainly caused a great curtailment of production during the second half of the year; but the results of the first half were so much above the average that the total, as already stated, was more than in the previous year. The production of Bessemer steel ingots was over 2,000,000 tons in 1890; the output of the past year is, therefore, less than it was three years ago by fully half-a-million tons. The decrease is undoubtedly due, for the most part, to the reduction in the output of steel rails, which has declined from 1,019,000 tons in 1890 to 579,000 last year. The Cleveland and Durham districts, the largest and most progressive of our iron manufacturing districts, produced a larger quantity of Bessemer steel ingots than any other British district. The South Wales district, which has hitherto held the first place, yielded last year 6000 tons less than the Cleveland and Durham districts. Indications are not wanting, however, that better times are in store, and it is to be hoped that no new labour difficulty may arise, which will retard any upward movement.

In defiance of the seasons and of natural obstacles, the construction of the Trans-Siberian Railway is still being actively pushed forward by the Russian Government, and the line will eventually prove one of the most gigantic traffic communications ever yet undertaken in civilised countries. The Trans-Siberian Railway is manifestly intended to serve both for strategic purposes in war and for commercial or industrial facilities during the quieter times of peace. Under its strategical import, and for the concentration of immense armies, the line will bring Russia in Europe into rapid communication (ten days at the most) with the port of Vladivostok, on the Pacific Ocean, and branch lines later on will prolong the road to the northern and western frontiers of China. Its commercial importance will be best judged from the fact that the line and its arteries will permit of the cultivation of those regions now lying waste in Siberia, which by favour of the climate have been recognised as suitable for raising cattle, sheep, and cereal produce of every kind, and will also afford a ready outlet to European markets for the wealth of timber and valuable mineral resources of this hitherto undeveloped country.

TASMANIAN MINING.—Twenty-seven years have elapsed since the Tasmanian Government commenced the compilation of mining statistics (says the *Mercury*), the quantity of minerals raised in the colony during 1867 being put down at 1363 ounces 5 dwts. of gold, valued at £4381 16s. Up to 1875 gold was the only mineral raised in any quantity, but in that year, in addition to £11,982 worth of the king of metals, 490 tons of tin, 3200 tons of iron ore, and 7719 tons of coal, the values of which were not recorded, were mined. The production of these minerals, with the exception of iron ore, went on steadily increasing. In 1879 the zenith of the gold production was reached, 60,155 ounces, valued at £230,895, being then extracted. Since that period the amount produced has fluctuated considerably, the lowest point being reached with 23,451 ounces in 1890. Last year this was exceeded by about 14,000 ounces. In 1888 silver made its first appearance in the returns, the value of the 417 tons then raised being set down at £5830. One hundred tons of copper were also exported at that period. The production of silver lead ore increased gradually till 1892, but in 1893 it took an enormous bound, the number of tons shipped from the colony being 15,710, with a gross value of £188,520. The maximum value of the Tasmanian mineral production was reached in 1887, when the total attained was no less than £761,683 from tin and gold alone, the value of the former exceeding half a million sterling. Last year, although the quantity of tin produced was but 792 tons less than that of 1887, the value of the metal, in consequence of depreciation, came to but £245,500, and the total value of the 1893 mineral production was £599,971.

JAPANESE V. ENGLISH COAL.—At the meeting of the China Steam Navigation Company, held in London, on Monday, the Chairman (Mr. David Reid) said that they were able to pay the full interest on the deferred and preferred shares, and also 5 per cent. on the ordinary shares. The better results had been derived from favourable coal contracts; a large quantity of their supplies east of Suez were obtained from Japanese mines. Owing to the fall in the value of silver they found that to import English coal east of Suez was unprofitable, and it was to the increasing advantage of the company that their engineers should be induced to use Japanese coal. There was a great and growing injury to these industries owing to the constantly increasing price of coal.—Mr. J. A. Maitland, in seconding the adoption of the report, said there was an enormous falling off in our exports to the far East. The cotton mills of Japan were, he believed, now turning out no less than 20,000 bales a month, and the Japanese cotton trade was very rapidly increasing, while China was largely importing mill machinery. It, therefore, behooved them to take every care of their trade. The report was adopted.

OUR CITY ARTICLE.

THURSDAY EVENING.

THE MINING MARKET.

Another strong week for Kaffirs.—Simmer and Jack and May Consolidated conspicuous.—Mysore and Nundydroog meetings.—Miscellaneous Shares more cheerful.

THE Kaffir Market has again displayed a cheerful and buoyant tone this week. Most of the gold shares have been in demand at improved prices. At the opening of the week the feature was a renewed demand for shares in deep level companies. The most conspicuous securities during the week have been Simmer and Jack and May Consolidated. In the case of the latter the proposal to reduce the capital of the company is looked upon with satisfaction and favour as the company is now earning profits of more than £2000 a month, sufficient to pay a fair dividend on a moderate share basis. The report of the annual meeting of the Rand Mines (Limited), and that of Mr. Perkins, sent the shares up at a bound, the latter now standing at 9½, so that the market value of the property now stands at over £3,600,000. To this has been due probably the great and more persistent attention paid to deep level companies throughout the week. City and Suburban have again been regarded with favour, and the shares have displayed a steady improvement. Nothing of a noteworthy nature has taken place in diamond shares. If anything, they have been the turn weaker. Land shares have likewise been little enquired for. The Indian and Miscellaneous market during the early part of the week was again quiet, but later on a more cheerful tone manifested itself. The meetings of both the Mysore and Nundydroog Companies were considered satisfactory, the former especially. There seems to be no reason whatever for depression or discouragement. The future of both properties look far from discouraging. Another dividend of 1s. has been declared by the Aladdin directors. The shares have consequently displayed firmness. This makes the third dividend for the current year.

British Mines.

There has been a much better feeling in the Cornish market during the last few days, and most of the shares available have been absorbed quietly. Carn Brea have advanced to 12½. Dolcoath have been in demand, and close firm at 75 with an upward tendency. The returns are large, but they are opening up a much larger quantity of tin every month than they are returning. Killisnoe are steady at 3½ ex div. At the meeting last Tuesday a profit of £917 was shown, and a 3s. dividend declared. South Frances have advanced to 17s. 6d. A few weeks back the shares were offered at 1s. West Frances have risen to 25s. West Kitty are in request at £7, but no shares on offer. Wheal Grenville are firm at 14½. The outlook is much more promising than for some time past. Risen: Carn Brea, 5s.; Dolcoath, 50s.; South Crofty, 2s. 6d.; South Frances, 12s. 6d.; Tincroft, 20s.; West Frances, 5s.; West Kitty, 10s.; Wheal Agar, 5s.; and Wheal Grenville, 10s. Fallen: Cook's Kitchen, 2s. 6d.

South African Shares.

The firm tone which was displayed in this market during the whole of last week was maintained throughout Monday, and, although the volume of business was not great, better prices were recorded in most of the descriptions. The deep level properties received the greatest share of attention. An improvement of ¼ took place in Stanhope, Robinson advanced 5-32, and Langlaagte to 4 9-32. Durban-Rodepoort were bought at an advance of 1-32, to 5 31-32, and Geldenhuis Estate were up to 4 25-32, Henry Nourse to 2 25-32, Meyer and Charlton to 5 23-32, Simmer and Jack to 5½, United Rodepoort to 2 3-32, and Wemmer to 4 23-32, all of these being 1-32 to ¼ better. There was also a stronger tone for George and May at 24s. and for Sheba at 13-32, but New Primrose relapsed ½ to 4½. Main Reef eased off to 21s. 6d., and Spes Bona fell to 21s. 3d., Buffelsdoorn being again a dull market at 20s. 6d. sellers. Among the cheaper shares, Knight improved 2s. 6d. to 18s. 6d., Bantjes were ¼ better at 16s. 9d., and East Rand were a little harder at 14s.; while Kimberley-Rodepoort receded 1s. 9d. to 7s. 6d., and May Consolidated dropped to 10s. 6d. De Beers kept steady at 15½, but Jagersfontein lost ½ to 16½. An improved tone likewise characterised land descriptions, both Chartered and Consolidated Gold Fields receiving attention. Tuesday witnessed a tendency to fluctuate in this market. At the commencement of the day but little activity was manifested, and prices began to droop, but later on towards the close a revival took place, and the tone became exceedingly firm. Simmer and Jack were the most conspicuous at a rise of 10s. May Consolidated likewise fluctuated on the prospect, an advance of ¼ taking place. There was also a renewed request for Stanhope at 1½ bid. A rise of ¼ took place in City and Suburbans. Geldenhuis improved to 4½, Langlaagte to 4 11-32, New Kleinfontein to 1 1-32, and New Chimes to 1 13-32. On the other hand, a reaction of ½ took place in Ferriera, of ¼ in Jubilee, of ½ in Crown Reef, and of 3-32 in New Reifontein, whilst declines also affected Durban Rodepoort, New Primrose, Salisbury, and United Rodepoort. Deep level shares were likewise enquired for, Consolidated Deep, Goldenhuish Deep, and Gold Fields Deep being extremely firm. Amongst land descriptions Chartered fluctuated and closed a shade lower. Consolidated Gold Fields hardened a turn. There was scarcely any business done in diamond shares, and both De Beers and Jagers receded ¼. On the following day a more buoyant tone distinguished the whole of this market, gold shares continuing very firm. Simmers continued their advance, and went up as high as £8. May Consolidated likewise showed further strength, the price going up to 12s. 9d. buyers, but closing a shade lower. Cities again improved, as well as Geldenhuis Estate, Henry Nourse, and Crown Reef. Meyer and Charlton remained unchanged. On the other hand, United Rodepoort and Primrose rallied, whilst a better tone characterised Jumpers and Chimes. Chartered continued dull, but hardened to 29s. 9d. The only variation among diamond shares was in Jagers, which gained ¼.

Indian and Miscellaneous Shares.

Very little was doing in this market at the commencement of the week. Nevertheless, quotations were well maintained. After opening dull, Broken Hill Proprietary rallied slightly on the improvement in the price of silver. Aladdin advanced to 1½. De Lamara were dull, whilst the encouraging statement at the meeting did not improve Elkhorn shares. A steady tone distinguished Indians, Champions and Ooregum being the most conspicuous. Mysore reefs were lower. Amongst copper shares Rio Tinto improved ¼ on Tuesday, but few changes took place in this department of the market, although a fair amount of business was got through. Indian shares were unchanged. Mysore shares remained firm,

the meeting being considered a satisfactory one. Broken Hill Pros. opened with a dull tendency, but the closing figures remained unchanged. On the following day a more cheerful and buoyant tone was displayed. Indians were steady, whilst Broken Hill Pros. were better, the dividend giving a firm tone to the shares. On the declaration of a further dividend of a shilling Aladdin's Lamp showed increased strength. Other miscellaneous securities were, on the whole, a turn better.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

ALADDIN'S LAMP.—The following cablegram has been received from the mines:—"165 tons of ore have been crushed during last fortnight, yielding 910 ounces of gold. Have commenced driving in both directions from the No. 2 winze on the 400 feet level. The formation is favourable for development of ore bodies. The stopes are looking splendid. The Jackass shaft is now down 480 feet."

BAYLEY'S REWARD.—Manager telegraphs March 15: "Cut large body quartz in crosscut 220 feet level. Think main reef out one yard, not yet through. Stone shows heavy gold."

BROKEN HILL PROPRIETARY.—The directors have received the following cable from Melbourne:—"Dividend of 1s per share, declared payable April 11. Books will be made up on morning of the 31st inst."

BUFFELSDOORN ESTATE AND GOLD.—The following is the copy of a cablegram received from the head office of the Company in Johannesburg:—"Seams of coal have been discovered four miles from the mine, which will be a great advantage. The cost of mining and milling with the improvements specified will, I estimate, be reduced 3s. 10d. per ton."

CRIVEN'S CALEDONIA.—The following cablegram has been received, giving result of crushing for past fortnight, dated Charters Towers, March 20:—"200 tons yielding 530 ounces gold, partial clean up."

CROWN REEF.—Copy of cablegram received from Johannesburg March 17:—"February. Number of days working 90 stamps, 26 days 2 hours; tons crushed by mills, 8199; tons of tailings and concentrates treated by cyanide works, 10,080; yield in smelted gold from mills, 3567 ounces; ditto, cyanide works, 2693 ounces=6260 ounces.—Working expenditure and revenue. Mining, transport, milling, cyanide, general charges, maintenance, and mine development redemption, £16,599; profit for month, £4848 4s.; total, £21,447 4s. Gold account from mills, 3267 ounces at 72s., £23,514 4s.; 2693 ounces from tailings and concentrates, £8606; total, £21,447 4s. Expenditure on account of capital, £15,240; revenue per ton crushed, £2 12s. 379d.; cost per ton, £2 0s. 588d.; profit per ton, 11s. 99d."

EL CALLAO.—Messrs. Baring Brothers and Company (Limited) have received the following telegram from El Callao Mining Company:—"651-675 ounces of gold produced by El Callao Mine for past fortnight, and 1176-1200 ounces by the Colombia Mine."

EXPLORATION.—Alaska Mexican Gold Mining Company: Cablegram from Alaska reports the second clean-up (for the month of February) as follows:—"Period since last return, 28 days; mill ran, 27 1/2 days; bullion shipped, \$14,581; ore milled, 4587 tons; sulphurets treated, 87 1/2 tons; of bullion there came from sulphurets, \$2715; working expenses for period, \$10,600."

FRONTINO AND BOLIVIA.—The directors have received advices from the mines for the month of January:—"Produce value, £5693 8s. 9d.; cost, £4366 13s. 1d.; estimated excess of returns, £1326 15s. 8d."

GEORGE GOCH AMALGAMATED GOLD.—The directors have received a cablegram from Johannesburg, giving the result of working during February as follows:—"5347 tons crushed, 1333 ounces won, and 227 ounces from concentrates. 26 days working with 50 stamps."

GRAVEL GOLD MINES OF COLOMBIA.—Referring to the postcard of the 15th February, the directors have now received a cable from the superintendent to the effect that washing has been recommenced after carrying out the work of connecting the new ditch with the mine pipe.

GUADALUPE QUICKSILVER.—The quantity of quicksilver drawn off during the week ending March 15, as cabled from the mines, amounts to 4200 lbs., equal to 56 flasks.

KABONGA.—In reply to cables to the Chairman of Local Board and the manager at Smeaton; answers by cable have been received to the following effect:—"South-west drive 990, south east drive 972, borings 116. Laminated quartz must lead to rich alluvial. Drives going on well. Local Board express entire satisfaction, regret delay arisen from hard country. Consider success certain."

MILL'S DAY DAWN UNITED.—Return for the four weeks ending March 17:—"Tons crushed 3800; ounces gold obtained, 4107; approximate value, £14,150. Dividend 6d. per share payable Tuesday March 27."

MOUNT LEYSHON.—The Mount Leyshon (Limited) have received the following cablegram dated 21st inst., from their manager at Charters Towers, giving the fortnightly crushing:—"1500 tons crushed 256 ounces gold; 40 stamps mill ran 288 hours; profit £50. Crosscutting towards Prospecting Shaft."

MYMORE WEST AND MYMORE WYNNAAD CONSOLIDATED.—Tank Block: The mining manager telegraphs this day as follows:—"Recommenced to stamp on 19th day of March. Mill has been running on low grade ore."

NEW QUEEN.—The directors have received the following cablegram, dated Charters Towers, March 17, giving result of crushing for past fortnight:—"250 tons, yielding 500 ounces gold. Will ship 1003 ounces a.s. Merka."

OURO PRETO.—This company has received a cablegram from the mines, giving the return for the month of February as follows:—"3064 tons produced 34,558 grammes=1111 ounces."

TRANSVAAL COAL TRUST.—The following is copy of a cablegram which has been received from the Transvaal Coal Trust Company (Limited) at Johannesburg:—"Declared a dividend 2 1/2 per cent., payable March 31. Transfer books closed the first week in April."

WEST AUSTRALIAN GOLDFIELDS.—The secretary writes:—"You will be interested to learn that I have just received a cablegram stating that heavy rains have fallen at Coolgardie, and, in view of the outcry which has been made as to the scarcity of water, the importance of this to the company can hardly be exaggerated."

WAIHI GOLD.—Bullion return for 28 days ending 10th inst., £4700 from 1800 tons.

WORCESTER EXPLORATION GOLD.—Return for January is as follows: 20 stamps working 29 1/2 days crushed 1451 tons from south reef and 590 tons main reef, yielding 1590 ounces 15 dwts., and from concentrates 275 ounces of gold.

MINING NOTES.

HOME, COLONIAL, AND FOREIGN.

WE understand, says the *Daily Inter Mountain*, that Mr. A. L. Devenish has purchased the machinery (consisting of engine, trucks, rails, sluice-boxes, and other appliances) of the Royal Nugget Alluvial Gold Mining Company (Limited), at Frischgewagd, and that he has pegged off a number of claims, and will shortly commence work thereon. For some time past several diggers have been at work in the Frischgewagd Valley, and have been winning gold at the rate of over 2 ounces per man weekly. Mr. C. J. Clarke, who has had a lifetime's experience of alluvial washing in California, on the largest scale, visited the ground, and informs us that the formation and the deposits of water-worn gravel in the terraces which comprise the ancient bed of the river are precisely the same as the pay ground of the richest alluvial diggings in California. He has little doubt that gold in considerable quantity will be found in portions of the Frischgewagd river basin. We may mention that a nugget of over 3 ounces in weight has been found within the last fortnight.

WHAT promises to be an important discovery of tin was made at the Half-mile Creek, about half a mile from Maryland (says the *Post*). Messrs. Crisp Bros. and Buchanan have taken up a 40-acre mineral lease on a small gully which branches off the Half-mile Creek, and have found very rich tin in several portions of the lease. A shaft has been sunk to a depth of 17 feet with very satisfactory results. On top there is, we are informed, about 18 inches of surfacing, which will pay well to put through when the water is convenient. Below this is about 6 feet of clay which, it is calculated, will average about a quarter of a pound to the dish, and at the bottom a large body of wash has been struck, which is of average richness. At present the only drawback is the want of running water to wash the "surfacing," and the holders of the lease are engaged stacking the dirt, awaiting a fall of rain. Several prospectors have been engaged in prospecting on the Half-mile Creek for some time, but with rather indifferent success. Messrs. Watson Bros. have, it is true, been getting very good tin in the adjoining block to Messrs. Crisp Bros. and Buchanan for a short time past, but otherwise the prospector has not been very successful. There is yet, however, a large amount of untried ground in the locality, and should the new find prove to be as rich as is thought at present the district in that neighbourhood will receive a good trial.

MR. BRAY, a gentleman who has recently returned from the McDonnell Ranges for the purpose of testing stone from a reef which he has discovered, has been interviewed by the *South Australian Register*. He states that there is some splendid country the other side of the Hart Range, where he has been prospecting, and the reef from which the stone at present in his possession was taken is fully 3 feet in width and well defined. He traced it for a distance of about two miles. There are also some very good mica deposits in the Hart Range, and several good claims have been taken up. He estimates that the stone which he is treating at present will go about 2 ounces to the ton. Water is very scarce at present, but there are two Government wells, which they have been permitted to use whenever required. By sinking 200 feet, and probably less, Mr. Bray says a good supply of water can be obtained.

THE largest nugget found in Shasta county for many years was picked up on February 21st by S. Elmore, on his gravel claim near Copley, says the *Free Press*. The nugget is about 5 inches long by 2 1/2 inches wide, shaped much like an egg, weighs 30 ounces, and is valued at \$520. Mr. Elmore is an old pioneer and miner, and formerly owned the ranch near Elmore, the railroad station named after him. W. W. Williams, the groceryman, has purchased the nugget, and will ship it to the mint for coinage.

THE property of the Albany Mining and Milling Company in the Santiam district has been sold to Thomas C. Drew, owner of the Hammersley Mine, and C. G. Clark for \$140,000. The mine, which is of low grade gold, and has been developed since 1860, comprises 13 claims, and has 3500 feet of tunnelling. The plant will be doubled and chlorination works added. The purchasers say there is enough ore in sight to keep 10 stamps running 10 years.

THE operations of the Montana Company (Limited) are as active as at any time during the winter, and the large force of men employed impart a prosperous appearance to the Marysville camp. A large amount of ore, much of it of high grade, is coming out of the great mine, and the growing bullion output promises continuance and no interruption. Ten of the stamps of the Bald Butte mill were hung up during the past month on account of the lack of water. The dividends of the company, however, commencing with January, have been 5 instead of 3 per cent. on the par value of shares—equal to 60 per cent. per annum.

THE Moulton Mine, says the *Daily Inter Mountain*, has been closed down again. The Buttesampling works are operating to their fullest capacity and have run more continuously the past two months than ever before. A great many mines are being worked on a small scale, the miners being in search of copper, while they take out barely enough silver to pay expenses. One notable exception is the Eveline Mine, which is regarded as a fabulously rich property, carrying large quantities of pure native wire silver and gold. It is said the Eveline Mine produces the richest ore ever found in this district.

MACHINERY is being placed in position at the new converter building of the Anaconda Company. The foundations for the five large engines are completed, and two of them are in position. Four of these engines will be about 200 horse-power each and one about 500 horse-power. Men are putting them up as fast as they can get the machinery, which is arriving very slowly. The boilers are nearly all in place. There is to be six large boilers, all but one of which is there, and in one of them steam is constantly kept up. The greater part of the power developed by these engines will be used on the air compressors for the converters in the building above. There are six stands ready for converters in the building, on four of which the converters are already in place, and the others can be put in at any time.

THE latest news from Mashonaland states that there is no fever at Victoria or Salisbury. Gold mining work is being done in the Victoria district, and also in the Suez district, and there is every probability that the results this year will be satisfactory. The telegraph contractors have reached Salisbury from Tete, on the Zambesi, a total distance of 220 miles. The telegraph road is out for 80 miles from Tete through dense brush. The remainder of the distance is easy of construction. A gang of 350 natives will commence erecting poles and wires on March 15.

THE METAL MARKETS.

LONDON METAL MARKET.

THE METAL MARKET—LONDON, MARCH 22.

Copper.

THE consumption of copper in Europe is, on the whole, fair, and in some parts—like Germany, for example—is very good, but there is a general complaint amongst manufacturers about prices leaving no margin, and there seems to be still a good quantity of copper—ex previous purchases from America—lying at the various railway stations or being delivered in anticipation to consumers, so that there is not, at any moment—even when G.M.B.'s sometimes rise in value—any eagerness on the part of consumers to buy. The G.M.B. market opened on Monday firm at £41 10s. s.c., and £42 three months, but declined 1s. 3d. in the course of the day. On Tuesday £41 6s. 3d. and £41 5s. were the ruling values for spot, while three months changed hands at £41 16s. 3d. and £41 15s. On Wednesday spot touched £41 2s. 6d., and the market closed on Thursday morning steady at £41 to £41 2s. 6d. s.c., and £41 12s. 6d. to £41 13s. 9d. the 3 months. The transactions averaged about 500 tons per day. In furnace material 7s. 3d. has been paid for 13 per cent. Spanish ore, and for 15 per cent. Copiapo ore, while Chile regulus has been done at 8s. 1 1/2d.

Tin

opened better, and cash Straits was done at £67 12s. 6d., rising on Tuesday to £68 5s., but declining then to £68. On Wednesday, spot rose to £68 10s. and three months to £69 5s. On Thursday morning the firmness was again maintained, and a further advance recorded, s.c. changing hands at £68 15s. and £69, and three months at £69 10s. to £70. The close was strong at £69 2s. 6d. to £69 5s. s.c., and £69 17s. 6d. to £70 three months. Billiton opened at fl. 40 1/2 s.c., and closes at fl. 41 1/2, with three months at fl. 42 and Banca at fl. 45.

Pig Iron

opened in Glasgow at 43s. 0s. 4d. a month. Scotch and s.c. was done later at 42s. 10d. and 42s. 9 1/2d. The latter position touched 42s. 11 1/2d. on Tuesday, 42s. 10d. on Wednesday, and 43s. on Thursday, closing firm at 43s. 3 1/2d. sellers. Hematite is quoted 45s. 1 1/2d., and Middlesbrough 36s. Scotch shipments last week were 5204 tons, or 4732 tons less than in the same period last year.

Lead

is dull at £9 3s. 9d. to £9 5s. soft foreign, and £9 5s. English.

Spelter

is also dull, without any special feature, and closes at £15 12s. 6d. to £15 15s. ordinaries, and £15 15s. to £15 17s. 6d. specials.

Antimony

is unchanged at £36.

Quicksilver

has been reduced to £5 10s. firsts, and £5 9s. 6d. seconds.

The following are to-night's (March 22) prices of metals:—

Copper.			
Tough cake and ingot	...	£ s. d.	£ s. d.
Best selected	...	43 5 0	43 17 6
Sheets and sheathing	...	41 5 0	45 5 0
Flat bottoms	...	54 0 0	55 0 0
Chill bars	...	...	...
Good merchantable, spot, & 3 months respectively	...	41 2 6	41 12 6
Copper tubes, seamless	...	...	0 0 7 1/2
Alloys.			
BRASS: Wire	...	...	0 0 5 1/2
" Tubes (solid drawn)	...	...	0 0 5 1/2
" Sheets	...	...	0 0 5 1/2
PROSPER BRONZE: Alloys II.	...	...	85 0 0
" " III. or V.	...	...	85 0 0
" " VII.	...	...	95 0 0
" " XI.	...	...	95 0 0
" " Vulcan brand A1 B.C.	...	80 0 0	85 0 0
DURO METAL	...	80 0 0	85 0 0
BULL'S METAL	...	...	70 0 0
Ferrobronzes (Vivian's).			
Ingots	...	per lb.	0 0 5 1/2
Ordinary sheets, plates, bolts and bars	...	...	0 0 6 1/2
Screw bolts and nuts	...	...	0 0 8 1/2
Pump rods, plain	...	...	0 0 7 1/2
" finished	...	...	0 0 10 1/2
DELTA METAL: No. 4 (per ton)	...	...	73 10 0
" Sheets and plates (per lb.)	...	...	0 0 10 1/2
" Bars, round, square, flat (per lb.)	...	...	0 0 9 1/2
" hexagon (per lb.)	...	...	0 0 9
Tin.			
English, ingots, f.o.b.	...	73 15 0	74 5 0
" bars	...	74 15 0	75 5 0
" refined	...	75 15 0	76 5 0
Straits, spot and 3 months respectively	...	69 2 6	69 17 6
Australian spot, and three months respectively	...	69 17 6	74 12 6
Banco (in Holland)	...	75 10 0	75 12 6
TIN PLATES: Charcoal, best quality	...	per box	0 13 6
" ordinary	...	...	0 11 6
" Coke, best quality	...	...	0 10 0
" ordinary	...	...	0 10 0
These prices of tinplates are f.o.b. at Swansea; at Liverpool 6d. per box more.			
Iron.			
Fig. G.M.B., f.o.b., Clyde, spot	...	...	2 3 0
" Scotch pig, No. 1 Gartsherrie	...	...	2 11 6
" " Coltness	...	...	2 10 6
" " Clyde	...	...	2 9 6
" " Govan	...	...	2 8 6
Bars, Welsh, f.o.b. Wales	...	...	5 5 0
Plates	...	...	5 12 6
Bars, Staffordshire, at works	...	...	6 15 0
Sheets	...	...	6 12 6
Plates	...	...	5 17 6
Hoops	...	...	4 17 6
Ship plates, Middlesbrough	...	...	20 0 0
STEEL: English spring	...	nominal	21 0 0
" cast	...	quality	38 0 0
" Rails at works, according to section	...	...	3 12 6
Lead.			
Spanish or soft foreign	...	9 3 9	9 5 0
English pig, common	...	...	9 15 0
" L.B.	...	...	10 7 6
" sheet and bar	...	...	10 17 6
" pipe	...	...	12 2 6
" red	...	...	16 10 0
" white	...	...	13 15 0
" patent shot	...	...	...
Spelter.			
Silesian ordinary brands	...	15 12 6	15 15 0
" special brands	...	15 15 0	15 17 6
English Swansea	...	16 5 0	16 7 6
Sheet Zinc	...	12 0 0	13 10 0
Antimony.			
Antimony	...	...	38 0 0
Quicksilver.			
Flasks, 75 lbs. warrants	...	5 10 0	5 9 6
Ore, c.i.f., U.K. ports	...	per unit.	...
1st quality, 50 per cent. and upwards	...	...	0 1 0
2nd " 47 per cent. to 50 per cent.	...	...	0 0 10
3rd " 40 " 47 per cent.	...	...	0 0 12
Aluminium.			
98-99 per cent. (guaranteed 98 per cent. min.)	...	In ingots (1 cwt. lots)	0 2 11
" do	...	(5 cwt. and up)	0 1 11
98-99 per cent. guaranteed	...	Nickel.	0 1 7 1/2

INTENSE excitement has been caused in the principal mining centres of the colony by the discovery of gold-bearing reefs of great richness little more than 30 miles from the capital. A great rush has set in to the field, and already a township is springing up. The gold-bearing reefs have been traced for a distance of many miles.

ANOTHER mud-rush has taken place in the De Beers Diamond Mine. It brought down huge blocks of blue, which caught the workmen, and fearfully mutilated several of them. The bodies of one white miner and three natives have been found, and the discovery of others is expected at any moment.

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—A, Antimony; A, Arsenic; B, Blende; Bz, Borax; C, Copper; D, Diamond; G, Gold; I, Iron; L, Lead; M, Manganese; N, Nitrate; P, Phosphate; R, Ruby; S, Silver; S, Silver-lead; Sul, Sulphur; T, Tin; and Z, Zinc. * In the "called up" column of British Mines, signifies that the mine is conducted on subject to the Limited Liability Law of the South African Republic.

The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and almost invariably be found correct; we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.

BRITISH MINES.

Name.	Closing Price, Mar. 22, 1894.	Closing Price, Mar. 16, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
Atlas	—	—	£ 10	—	£ 12 6	12,000	Devon	Camborne.
Blue Hills	1/— 3/—	3/—	—	2/— May '91	6 11 8	6,000	Cornwall	Camborne.
Botolph	—	—	—	—	51 4 6	2,220	Cornwall	St. Just.
Carn Brea	12 1/2 12 1/2	12 1/2	—	2/6 Dec. '93	21 5 3	6,000	Cornwall	Carn Brea.
Cook's Kitchen	2 1/2 7/6	7/6	—	5% May, '88	29 5 4	4,900	Cornwall	Camborne.
Cumberland	—	—	1 0	—	1 0 0	85 0 0	Cumberland	7, Angel-court E.C.
Cwmystwyth	—	—	1 0	—	1 0 0	5,000	Cornwall	Camborne.
Derwentwater	—	—	1 0	—	1 0 0	10 0 0	Cumberland	Manchester.
Devon Gt. Cons.	17/6 22/6	13 1/2	8 0	3/— Nov. '93	2 0 0	12 0 0	Devon	5, Finbury-circus.
Dolcoath	7 1/2 7 1/2	7 1/2	—	5/— Jan. '94	9 10 0	4,700	Cornwall	Camborne.
Drakewalls	—	—	1 0	—	1 0 0	100,000	Cornwall	Dashwood House.
East Blue Hills	—	—	1 0	—	1 13 3	4,283	Cornwall	79 1/2, Gracechurch-st.
East Grassington	—	—	1 0	—	1 0 0	20,000	Yorkshire	Palmerston-building.
East Pool	10 1/2 11 1/2	11 1/2	—	5/— Oct. '93	0 9 9	6,400	Cornwall	Illogan.
Gawton	—	—	50/-	—	2 7 3	12 0 0	Devon	20, Great St. Helens.
Great Taw	2 3	3 1/2	4 0	5/— Apr. '92	4 0 0	15,000	Iale of Man	Douglas, Isle of Man.
Green Hurth	—	—	1 0	—	0 19 0	32,000	Cumberland	Newcastle.
Halkyn	—	—	1 0	2/— Sep. '93	1 0 0	10,000	Flintshire	Chester.
Haworth	—	—	1 0	—	1 0 0	18,333	Iale of Man	Chester.
Isle of Man	—	—	5 0	5/6 Sep. '93	5 0 0	14,000	Iale of Man	Chester.
Killbuck	—	—	5 0	3/6 Dec. '93	5 0 0	6,000	Cornwall	Camborne.
King's	3 1/2 3 1/2	3 1/2	—	3/— May, 1892	1 0 0	15,919	Cardiganshire	6, Queen-street-place.
Lead Hills	17/6 22/6	22/6	6 0	3/— Sep. '92	11 9 6	20,000	Lanarkshire	30, Finbury-circus.
Levant	—	—	—	10/— Aug. '93	1 0 0	2,500	Cornwall	Penzance.
Lowell	—	—	—	1/3 Nov. '91	1 16 7	7,165	Wendron	3, Gt. Queen-st., S.W.
Miners (New)	—	—	5 0	—	6 0 0	9,000	Denbighshire	Miners, N. Wales.
New Bala	—	—	1 0	6% Feb. '91	0 18 6	48,815	Northumberland	Newcastle-on-Tyne.
New Bala	—	—	1 0	—	1 0 0	50,000	Cornwall	St. Clement's Ho., E.C.
New Bala	—	—	1 0	—	10 12 3	4,900	Cornwall	Camborne.
Phenix United	6/- 7/-	7/-	—	1/— Mar. '90	4 3 6	7,000	Cornwall	Redruth.
Polbarro & Trev.	—	—	—	—	1 11 6	18,000	Cornwall	37, Walbrook.
Prince of Wales	2/- 3/-	3/-	10/-	—	—	—	Cornwall	37, Walbrook-gardens.
Roman Gravel	—	—	10/-	—	—	—	Salop	11, Queen Vic.-st., E.C.
Rushen	—	—	1 0	5% Sept. '91	1 0 0	26,131	Iale of Man	Douglas.
So. Condor	5/- 10/-	10/-	—	3/6 Apr. '93	7 12 1	8,123	Cornwall	20, Great St. Helens.
South Crofty	2 1/2 2 1/2	2 1/2	—	—	12 16 8	5,120	Cornwall	Pool, Cornwall.
South Devon	—	—	—	—	—	—	Cardiganshire	6A, Austin Friars.
South France	—	—	—	—	—	—	Cornwall	Redruth.
Tincroft	12 12 1/2	11 1/2	—	3/— Dec. '93	15 7 6	5,000	Cornwall	Carn Brea.
Westdale	—	—	8 0	1/3 Oct. '90	1 0 0	80,000	Dorset	3, Lombard-court.
West Franks	1 1/2 1 1/2	22/6	—	2/5 May, '90	15 15 1	5,144	Cornwall	Camborne.
West Kitty	7 7 1/2	7	—	4/— Jan. '94	0 12 0	6,000	Cornwall	37, Walbrook.
Wheat Ayr	1 1/2 2 1/2	2	—	2/6 Aug. '88	22 0 8	6,000	Cornwall	Redruth.
Wheat Basset	3 3 1/2	3 1/2	—	10/— Apr. '93	12 0 10	5,144	Cornwall	Redruth.
Wheat Friendly	3/— 4/—	4/—	—	—	0 11 3	10,000	Cornwall	37, Walbrook, E.C.
Wheat Grenville	14 15	14 1/2	—	3/— Feb. '94	17 10 0	6,000	Cornwall	7, Union-court, E.C.
Wheat Kitty	16 16 1/2	16 1/2	—	3/— Mar. '93	7 9 8	4,295	Cornwall	Truro.
Wheat Metal & F.	—	—	—	—	0 13 9	10,784	Cornwall	79 1/2, Gracechurch-st.

AUSTRALIAN AND NEW ZEALAND MINES.

Achilles Gld Fl.	2 2 1/2	2 1/2	1 0	—	1 0 0	80,307	New Zealand	3, Church Pas. E.C.
Aladdin Lamp	1 1/2 1 1/2	1 1/2	1 0	1/— Mar. '94	1 0 0	100,000	N. S. Wales	4-6, Throg. Avenue.
Anglo-Saxon	—	—	1 0	2/— July, '89	1 0 0	51,000	Queensland	4, Lombard-court.
Australasian	2 1/2 2 1/2	2 1/2	1 0	1/5 Mar. '92	1 0 0	210,000	Queensland	5, Queen-st. place.
Australian	—	—	20 0	1/6 Aug. '93	1 0 0	18,315	N. S. Wales	15, Old Jewry Chbrs.
Aus. Pro. Hill Cons.	1 1/2 1 1/2	1 1/2	1 0	1/— June, '91	1 0 0	540,000	N. S. Wales	Winchester House.
Blue Spur & G. G.	1/6 1/6	1/6	1 0	—	1 0 0	75,325	New Zealand	6, Gt. St. Helens.
Bonnie Dundee	2 1/2 3 1/2	3 1/2	1 0	—	0 18 0	120,000	Queensland	3-5, Gracechurch-st.
Brilliant Black	1 1/2 1 1/2	1 1/2	2 0	—	2 0 0	250,000	Queensland	3, Gracechurch-st.
Brit. Brok. Hill S.	2 1/2 3 1/2	3 1/2	5 0	—	6 0 0	240,000	N. S. Wales	Abchurch Chambers.
Broken Hill Prop.	2 1/2 3 1/2	3 1/2	8 0	1/6 Dec. '93	0 12 6	98,000	N. S. Wales	Abchurch Chambers.
Carrington	1 1/2 2 1/2	2 1/2	12 0	—	0 12 6	100,000	Queensland	9, Tokenhouse Yard.
Coromandel	1 1/2 2 1/2	2 1/2	12 0	—	0 12 6	98,000	India	6-7, Queen-street-pl.
Craven's Col.	2 1/2 3 1/2	3 1/2	8 0	-3/ Nov. '93	0 0 0	80,000	N. S. Wales	3, St. Swithin's-lane.
Oroydon King Bk.	—	—	5/-	—	0 0 0	80,000	N. S. Wales	3, St. Swithin's-lane.
Oumbrin (New)	-9/ 1/3	1/3	1 0	2/6 Dec. '87	1 0 0	200,000	Queensland	Blomfield-st.
Day Dawn B.W.G.	4/3 5/3	5/3	1 0	-6 Mar. '93	1 0 0	498,400	Queensland	3-5, Gracechurch-st.
Day Dawn P. C. G.	4/3 5/3	5/3	1 0	-6 Apr. '92	1 0 0	490,000	Queensland	Winchester Ho., E.C.
Edgemoor	1 1/2 1 1/2	1 1/2	5 0	—	0 18 0	120,000	Queensland	31, Lombard-street.
Golden Gate	1 1/2 1 1/2	1 1/2	10/-	—	0 18 0	120,000	Queensland	6-7, Queen-street-pl.
Glenrock	2 1/2 3 1/2	3 1/2	10/-	—	0 18 0	120,000	Queensland	9, Tokenhouse Yard.
Harrietville	1 1/2 1 1/2	1 1/2	10/-	-6 July, '90	0 18 0	120,000	N. S. Wales	3-5, Queen-st. E.C.
Kabonga	1 1/2 1 1/2	1 1/2	10/-	—	0 18 0	120,000	Queensland	6-7, Queen-street-pl.
Kangaroo	-9/ 1/3	1/3	1 0	—	1 0 0	82,275	N. S. Wales	30, St. Swithin's-lane.
Kapanga	-9/ 1/3	1/3	1 0	-6 Jan. '91	0 18 0	250,000	N. S. Wales	68, Coleman-street.
Kilkivan	—	—	1 0	—	1 0 0	120,000	Queensland	4, Coleman-street.
Midas G. F.	1 1/2 1 1/2	1 1/2	1 0	-6 Feb. '94	0 15 9	300,000	Queensland	32, Poultry E.C.
Miles Day Dawn	1 1/2 1 1/2	1 1/2	1 0	-6 Feb. '94	0 15 9	300,000	Queensland	3, Gracechurch-st.
Moruya	1 1/2 1 1/2	1 1/2	1 0	-6 Jan. '94	1 0 0	185,000	Queensland	16, St. Helen's-place.
Mt. Leyland	4/— 4/—	4/—	1 0	-3 Jan. '94	1 0 0	185,000	Queensland	3-5, Gracechurch-st.
Mt. Morgan	1 1/2 1 1/2	1 1/2	10/-	-6 Dec. '93	1 0 0	185,000	Queensland	7, Draper's-gardens.
Mt. Morgan Ex. G.	2 1/2 3 1/2	3 1/2	5/-	—	1 0 0	180,000	Queensland	Leadenhall Bldg.
Mt. Shamrock	—	—	1 0	—	1 0 0	275,000	Queensland	13, Basinghall-st. E.C.
Mount Zeehan	-6 1/—	1/—	1 0	-6 Feb. '94	0 19 6	158,915	Tasmania	Mansion Ho. Cham.
New Queen	3/3 5/3	5/3	1 0	-6 Feb. '94	0 19 6	158,915	Queensland	30, St. Swithin's-lane.
Port Phillip	—	—	5 0	—	0 0 0	200,000	Victoria	57, Moorgate-st., E.C.
Queen's Bldy. Un.	—	—	1 0	—	0 10 0	—	Victoria	7-8, Gt. Winchester St.
Queens Smelting	3 1/2 3 1/2	3 1/2	1 0	—	1 0 0	200,000	N. S. Wales	Winchester Ho. E.C.
Scottish Australian	3 1/2 3 1/2	3 1/2	10/-	-6 Mar. '92	1 0 0	200,000	Queensland	9, Tokenhouse Yard.
Sunburst	—	—	1 0	—	1 0 0	150,000	Queensland	9, Tokenhouse Yard.
Tasmanian Crown	—	—	1 0	—	1 0 0	175,000	N. S. Wales	5-5, Queen-st. E.C.
Tipperary	—	—	1 0	—	1 0 0	35,000	Australia	Leadenhall Bldg. E.C.
True Blue	1 1/2 2 1/2	2 1/2	1 0	-6 Mar. '94	1 0 0	144,000	Char. Towers	32, Gresham-st. E.C.
Victory	10/- 12/6	12/6	5 0	—	0 0 0	200,000	Queensland	32, Gresham-st. E.C.
Walsh	1 1/2 1 1/2	1 1/2	1 0	1/— Jan. '94	1 0 0	150,000	New Zealand	11, Abchurch-lane.
Wentworth Ord. G.	5/6 6/6	6/6	1 0	6/— Jan. '93	1 0 0	800,000	N. S. Wales	4-6, Throgmorton Ave.

INDIAN AND ASIATIC MINES.

Blaghat Mysore	4/3 5/3	5/3	1 0	—	1 0 0	160,000	India	6-7, Queen-street-pl.
Burma Ruby	6/- 7/-	7/-	1 0	—	0 17 0	300,000	Burmah	Suffolk House, E.C.
Champion Reef	3 1/2 3 1/2	3 1/2	1 0	—	1 0 0	200,000	India	6-7, Queen-street-pl.
Colar Central	-7/3 -7/3	-7/3	1 0	—	1 0 0	200,000	India	Dashwood Ho., E.C.
Coromandel	5/6 5/6	5/6	1 0	—	0 12 6	120,000	India	6-7, Queen-st. place.
Devila Moya	—	—	1 0	—	1 0 0	200,000	India	34, Nicholas-lane.
Gemming & Mining	—	—	2 0	—	1 7 8	24,458	Ceylon	183, Gresham House.
Gold Fide Mysore	23/6 24/6	24/6	1 0	1/— July '91	1 0 0	200,000	India	6-7, Queen-street-pl.
Gold Fide Siam	—	—	1 0	—	1 0 0	150,000	Siam	19, St. Swithin's-lane.
Hyderabad Gold	—	—	10 0	—	10 0 0	1,000,000	Decan	16, St. Helen's-place.
Kempinkote Gld Fl.	1 1/2 1 1/2	1 1/2	1 0	—	1 0 0	225,000	India	6-7, Queen-street-pl.
Mysore	3 1/2 3 1/2	3 1/2	1 0	3/— Mar. '94	0 19 0	200,000	India	6-7, Queen-street-pl.
Mysore Reels	3 1/2 3 1/2	3 1/2	1 0	—	1 0 0	130,000	India	Dashwood Ho., E.C.
Mysore West	3 1/2 3 1/2	3 1/2	1 0	—	1 0 0	200,000	India	Dashwood Ho., E.C.
Mysore Wynad	1 1/2 2 1/2	2 1/2	1 0	—	1 0 0	200,000	India	Dashwood Ho., E.C.
Nydy Feeds	1 1/2 1 1/2	1 1/2	10/-	—	0 10 0	250,000	India	6-7, Queen-street-pl.
Orissa	1 1/2 1 1/2	1 1/2	1 0	1/— Mar. '94	1 0 0	200,000	India	6-7, Queen-street-pl.
Orissa (D.O.)	1 1/2 1 1/2	1 1/2	1 0	3/6 Dec. '93	1 0 0	145,000	India	6-7, Queen-street-pl.
Do. (10% Pref.)	5 1/2 5 1/2	5 1/2	1 0	3/6 Dec. '93	1 0 0	120,000	India	6-7, Queen-street-pl.
Fahang Corp.	2 1/2 3 1/2	3 1/2	1 0	15% Apr. '93	1 0 0	394,700	Malay Penin.	Blomfield Ho., E.C.
Fahang Kaba	5/3 5/3	5/3	4/-	—	0 39 3	123,074	India	6-7, Queen-street-pl.
South V. Mysore	2 1/2 3 1/2	3 1/2	4/-	15 1/2 Dec. '93	0 4 0	200,000	India	20, Abchurch-lane.

EUROPEAN MINES.

Alamillos	L	10/- 15/-	15/-	2 0	1/6 Mar. '92	2 0 0	35,000	Spain	6, Queen-street-place
Argentella	C	—	—	1 0	—	1 0 0	133,165	Corsica	16, Philpot-lane.
Bratsberg	C	—	—	1 0	—	0 10 0	100,000	Norway	1, Gresham-buildings
English Cr. Spelter	C	3½ 3½	3½	1 0	5% Dec. '92	1 0 0	84,000	Lombardy	9, Queen-street-place
Fortuna	L	3½ 3½	3½	2 0	1/3 Mar. '92	2 0 0	25,000	Spain	6, Queen-street-place
Libiola	C	3½ 3½xd	3½xd	5 0	2/6 Sept. '93	5 0 0	50,400	Italy	Dashwood Ho., E.C.
Linares	L	3½ 3½	3½	5 0	5/- Sep. '93	3 0 0	15,000	Spain	6, Queen-street-place
Marbella	C	60/- 61/-	61/6	10 0	5% Aug. '91	10 0 0	25,000	Spain	78, Queen Victoria-st.
Mason & Barry	C	42/6 47/6	47/6	2½	2/- May, '93	5 0 0	186,172	Portugal	37, Cannon-street.
Oscar	C	—	—	5 0	—	0 4 8	117,240	Norway	6A, Austin Friars.
Pontcharra	C	1½ 2½	2½	3 0	—	3 0 0	67,400	Italy	6-7, Queen-street-pl.
Pontcharra	L	10 12	12	30 0	12½ 7/- Nov. '92	30 0 0	14,000	Spain	30, St. Swithin's-lane
Do Pinto	C	15½ 15½	15½	10 0	5% Jan. '91	10 0 0	325,000	Spain	30, St. Swithin's-lane
Do, (Mort. Bonds)	C	16½ 16½	16½	100 0	5% Jan. '91	100 0 0	2,188,000	Spain	30, St. Swithin's-lane
Do, (Exp. de.)	C	3½ 3½	3½	100 0	5% Jan. '91	100 0 0	1,137,100	Spain	30, St. Swithin's-lane
Elipani	C	6/6 2/6	2/6	1 0	—	0 10 0	85,000	Spain	30, St. Swithin's-lane
Faralls	C	4/6 2/6	2/6	1 0	15% Apr. '98	0 10 0	85,000	Spain	30, St. Swithin's-lane
Faralls	C	4/6 2/6	2/6	1 0	15% Apr. '98	0 10 0	85,000	Spain	30, St. Swithin's-lane
West Prussian Pr.	C	10 10½	10½	10 0	5% Jan. '93	10 0 0	5,400	Germany	Wladow.
West Prussian Or.	C	10 10	10	10 0	5% Jan. '93	10 0 0	14,000	Germany	Wladow Ho., E.C.

"THE MINING JOURNAL" SHARE LIST (African Mines continued).

Name.	Closing Price, Mar. 22, 1894.	Closing Price, Mar. 18, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.	Name.	Closing Price, Mar. 22, 1894.	Closing Price, Mar. 18, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
Joe's Luck.....G	1/6 2/6	2/6	1 0	—	—	57,404	De Kaap	11, Queen Vic.-st.	Piggs Peak.....G	—/8	—/8	1 0	—	—	230,328	Swaziland	8, Queen-street-place
Jubilee.....G	5/4 5/4	5/4	1 0	30% Oct. '93	1 0	30,000	Witwatersdrd.	8, Old Jewry.	Potchefstroom...G	3/— 4/—	4/—	1 0	—	—	161,000	Potchefstroom	19, Bury-st., E.O.
Jumpers.....G	4 1/4 4 1/4	4 1/4	1 0	10% Jan. '93	1 0	100,000	Witwatersdrd.	29, Holborn Viaduct	Princess Estate G	1 1/4	1 1/4	1 0	—	—	72,048	Witwatersdrd.	33, Cornhill, E.O.
Kleinfontein...G	—	—	1 0	—	—	150,000	Witwatersdrd.	8, Old Jewry.	Randfontein.....G	12/3 12/9	12/6	1 0	—	—	1,986,500	Witwatersdrd.	59, Holborn Viaduct
Klerksdorp.....G	1/6 2/6	2/6	1 0	—	—	150,007	Witwatersdrd.	110, Cannon-street.	Read's Drift.....D	9/— 10/—	10/—	1 0	—	—	50,000	Transvaal	18, Finsbury-circus.
Knight.....G	17/6 18/6	15/—	1 0	—	—	250,000	Witwatersdrd.	19, Bury-street, E.O.	Robinson.....G	5/4 5 1/4	5 1/4	1 0	—	—	543,750	Witwatersdrd.	55, Holborn Viaduct
Langlaagte Est. G	4 1/4 4 1/4	4 1/4	1 0	20% July '92	1 0	487,000	Witwatersdrd.	55, Holborn Viaduct	Rondepoort Un. G	—/4 1/4	—/4 1/4	1 0	—	—	100,000	Witwatersdrd.	Warnford-court, f
Langlaagte Est. G	2/9 3/—	3/—	1 0	—	—	883,233	Witwatersdrd.	110, Cannon-street.	Saibury New.....G	2 1/4 2 1/4	2 1/4	1 0	—	—	465,000	Witwatersdrd.	30-1, St. Swithin's-lane
Langlaagte Est. G	11/— 11/8	10/9	1 0	6% Mar. '90	1 0	344,003	Witwatersdrd.	8, Old Jewry.	Sheba.....G	22/— 23/—	22/—	1 0	—	—	92,000	Witwatersdrd.	1, Crosby-square, f
Main Reef.....G	—	5/9	1 0	—	—	300,000	Witwatersdrd.	Warnford-court, f	Silati.....G	4/— 4/8	4/6	1 0	—	—	614,450	Witwatersdrd.	15, Bishopsgt-st, Wt.
Manica Ophir.....G	—	—	1 0	—	—	90,000	Witwatersdrd.	2, Pinner's Court.	Simmer & Jack...G	5 1/4 5 1/4	5 1/4	1 0	—	—	85,000	Witwatersdrd.	4, Sun Court, E.O.
May Consol.....G	12/— 12/6	10/3	1 0	—	—	430,000	Witwatersdrd.	4, Lothbury, f	S.A. Gold Trust...G	17/6 18/6	18/—	1 0	—	—	220,000	Witwatersdrd.	33, Cornhill.
May Deep Level G	7/— 8/—	7/3	1 0	—	—	148,000	Witwatersdrd.	31, Cornhill, E.O.	Spitzkop.....G	1 1/8 2/—	2/—	1 0	—	—	144,531	Witwatersdrd.	15, Bishopsgt-st, Wt.
Metropolitan.....G	5 1/4 5 1/4	5 1/4	1 0	25% Dec. '93	1 0	75,500	Witwatersdrd.	1, Crosby Square, f	Stanhope.....G	13/6 13/6	13/6	1 0	—	—	34,000	Witwatersdrd.	1, Crosby Square, f
Meyer & Charlton G	—	—	1 0	—	—	71,887	Witwatersdrd.	Warnford-court, f	Sutherland R.....G	3/8 4/—	4 1/4	1 0	—	—	220,000	Witwatersdrd.	3, Budge-row, E.O.
Mitcheil.....G	—	—	1 0	—	—	45,000	Witwatersdrd.	Kimberley.	Tautonia.....G	12/— 12/6	12/3	1 0	—	—	95,000	Witwatersdrd.	8, Old Jewry.
Moderfontein...G	7/— 7/8	6/8	1 0	—	—	200,000	Witwatersdrd.	Warnford-court, f	Trans. Coal Trust..G	15/— 15/—	15/9	1 0	—	—	439,965	Witwatersdrd.	Broad-t. House, E.O.
Moody's G. & E. G	7/6 8/8	8/8	1 0	—	—	240,000	Witwatersdrd.	8, Old Jewry.	Trans. Est. & Dev. G	15/— 15/—	15/9	1 0	—	—	285,709	Witwatersdrd.	78, Old Broad-st, E.O.
Moody's (15/- p.) G	2/6 3/6	3/6	1 0	—	—	120,000	De Kaap	8, Old Jewry.	Trans. Gold.....G	28/— 30/—	33/—	1 0	—	—	250,000	Transvaal	33, Cornhill.
Namaqua.....G	15/— 20/—	20/—	2 0	2/6 July '91	2 0	194,351	Namaqualand.	34, Leadenhall-bld.	Trans. Land (15/-) G	2/— 2/—	3/—	1 0	—	—	250,000	Transvaal	33, Cornhill.
New Chimes.....G	1 1/4 1 1/4	1 1/4	1 0	—	—	70,000	Witwatersdrd.	8, Old Jewry, E.O.	Un. Ivy Reef.....G	18/9 21/3	1 1/4	1 0	—	—	45,000	Transvaal	110, Cannon-street
New Crosses.....G	1 1/4 1 1/4	1 1/4	1 0	5% Aug. '92	1 0	195,000	Langlaagte	4, Bishopsgt-st, Wt.	Un. Langlaagte...G	5 1/4 5 1/4	5 1/4	1 0	—	—	100,000	Witwatersdrd.	23, St. Swithin's-lane
New Jagersf.....G	1 1/4 1 1/4	1 1/4	1 0	—	—	100,000	Transvaal	5, Copthall-buildings	Van Ryn.....G	7/6 10/—	10/—	1 0	—	—	99,810	Witwatersdrd.	1, Crosby-square, f
New Primrose.....G	4 1/4 4 1/4	4 1/4	1 0	4% July '93	1 0	230,000	Witwatersdrd.	2, Draper's-gardens.	Victory Hill.....G	4 1/4 4 1/4	4 1/4	1 0	—	—	105,000	De Kaap	Portland House, E.O.
Nigel.....G	2 1/4 2 1/4	2 1/4	1 0	10% Dec. '93	1 0	160,000	Witwatersdrd.	1, Crosby-square.	Village Main Reef G	—	—	1 0	—	—	132,000	Witwatersdrd.	8, Old Jewry.
Nootgedacht E. G	2 1/4 2 1/4	2 1/4	1 0	—	—	150,000	Witwatersdrd.	8, Old Jewry.	Virginia.....G	—	—	1 0	—	—	48,335	Transvaal	26, Budge-row, E.O.
Oceana.....G	2 1/4 2 1/4	2 1/4	1 0	25% Nov. '89	1 0	150,000	Transvaal	4, Sun Court, E.O.	Wemmer.....G	4 1/4 4 1/4	4 1/4	1 0	—	—	150,000	Witwatersdrd.	34, Leadenhall-bld.
Ophir Consol.....G	—	—	1 0	—	—	111,857	E. Coast Africa	31, Lombard-street.	Witwatersdrd.....G	2 1/4 2 1/4	2 1/4	1 0	—	—	250,000	Witwatersdrd.	19, Bury-street, f
Orange F.S.E. ....G	3 1/4 3 1/4	3 1/4	1 0	—	—	284,000	Orange F. State	10, Moorgate-street.	Wolhuter.....G	2 1/4 2 1/4	2 1/4	1 0	—	—	120,000	Witwatersdrd.	Warnford-court, f
Oriental.....G	1 1/6 2/—	2/—	1 0	—	—	448,450	De Kaap	Jamaica-bgs, Cornhill	Worcester.....G	1 1/4 2	2	1 0	—	—	90,727	Witwatersdrd.	8, Old Jewry, f
Otto's Kopje.....G	1 1/6 1/6	1/6	1 0	—	—	500,000	Kimberley	110, Cannon-st., E.O.	Zwartland Land...G	—	—	1 0	—	—	150,000	Transvaal	19, Birch-lane, E.O.
Pearl Central.....G	1 1/4 1 1/4	1 1/4	1 0	—	—	138,750	Transvaal	29-30, Hol. Via., E.O.									

COMPANIES AND THEIR DOINGS.

Reports, Balance Sheets, Dividends, &c., of Mining, Railway, Banking, and other Companies.

MINING COMPANIES.

The Meyer and Charlton Gold Mining Company.

THE tenth half yearly report of the directors states:—The profit on the six months' operations was £28,400 17s. 10d., or equal to about 40 per cent. on the issued capital. Out of this profit a dividend (No. 13) of 25 per cent. has been declared, amounting to £17,921 15s.; 10 per cent., or £1792 3s. 6d., was put aside to reserve fund. For depreciation to permanent works, machinery, plant and buildings the very ample sum of £5523 18s. 10d. was written off, and £163 0s. 6d. was carried forward to the balance of profit and loss account, which shows a credit of £20,721 14s. 7d. A very large expenditure on capital account has been necessitated during the half year for additions to battery, hauling plants, buildings, &c., amounting to £10,060 16s. 6d., as detailed in statement annexed; also for added values to stores on hand, ore at grass, and mine development, totalling a further sum of £6839 10s. 1d., which together with payment of dividend No. 12 of £25,090 9s. during the period, gives an expenditure of £41,990 15s. 7d., in addition to the general working expenses. As stated above and in previous reports, your company has had very large expenditure on capital account for the purpose of enlarging the mine property, securing the freehold and completing mill and machinery, thereby bringing the company to its present satisfactory condition as regards mine, equipment, and title. To meet these necessary outlays profits earned had to be used, but being insufficient an overdraft has been arranged on favourable terms with the National Bank. The question of wiping out this overdraft is receiving the board's consideration. The amount to the debit of mine development account now stands at £13,718 3s. 6d., or slightly over 3s. per ton estimated on the tonnage of ore developed and in readiness for stoping.—Reserve Shares: 3313 shares remain unissued.—Mine Development Account: Credited with £2896 18s. for the tonnage of ore stoped during the six months' operations. Reserve fund, £7147 1s. 4d. Mine driven, sunk, and risen 2054 feet. Mined and hauled 20,368 tons, of which 735 tons have been added to ore reserves, making total at grass 2500 tons. Ore developed and available for stoping 81,987 tons. Operations have been commenced for the opening up of the fifth level from the No. 1 shaft, but in view of the increasing distance of the reef south of shaft as depth is attained, necessitating long crosscuts through barren rock, it is proposed to sink a main incline shaft between the present two vertical shafts and after completion of same to concentrate all the hauling machinery, &c., at that point, which will effect a saving in mining costs.—Mill and Milling: 10 stamps were erected last July, making 50 in all. An unfortunate breakdown of the crank-shaft of the battery engine took place in October, which necessitated the immediate purchase and erection of a new driving engine. Your directors succeeded in obtaining a suitable 50-horse power Turner compound engine at a very moderate figure. The work of erection was pushed on with the utmost vigour, and work resumed after an interval of about 14 days during which period there was, of course, an entire stoppage of revenue. The old engine remains in its former new position, and will be put in working order on arrival of the new crank shaft ordered from England. The whole mill is now well and thoroughly equipped, as will be seen by reference to the manager's report. The average amount realised for the bullion won during the six months was £3 15s. 1-619d. per ounce. Tailings.—14,034 tons produced have been sold to the Randt Central Ore Reduction Company realising £4180 14s. 6d. Cyanide works are to be erected under the supervision of Mr. Charles Butters, which should be complete by the end of March.—Working Expenditure: Reduction in cost equal to 4s. 9-556d. per ton less than for the preceding half-year and 10s. 1-968d. less than for the corresponding period of 1892. Mr. John Hays Hammond has accepted the appointment of consulting engineer to the company. Mr. A. H. Marker has been appointed a member of the London committee in place of Mr. Frans Voelklein resigned. The number of shareholders is 962.

West Argentine.

The directors have issued a circular in which they state:—Good progress has been effected in opening out the Tipperary Mine and completing the communications by tramway between the adit and reduction works. Up to the time when the company became interested in the Tipperary Mine all mining had been carried on from the upper workings, and from those the mine was stated to have yielded 15,120 ounces of gold, realising £57,828, as per certificate of the Bank of New Zealand, the ore, it was stated, averaging 22 1/2 dwts. over a considerable number of months. The plan so strongly recommended by Mr. L. O. Beal, C.E.M.E., was the driving of a low level adit, as to drain the mine and enable the ore to be delivered at the mill at a cost of about 5 dwts. gold to the ton. This is the important work of development now in hand. The extension of the upper level was also strongly recommended, and this was taken in hand on account of its opening up ore bodies for crushing at an earlier date than could be expected from the lower tunnel; and

indications justified this step, and led our manager to expect encountering considerable ore bodies, but in driving the nature of the ground suddenly changed, and a local disturbance in the formation of the hill altogether interfered for the time with the infiltration of quartz and gold. This, however, it is believed and hoped, will prove only very temporary, and driving is being continued so as to get beyond the limit of such disturbance into settled ground. Some exceedingly rich branches of quartz have been met with, and the reefs afforded satisfactory results on assay of samples, but the disturbance above alluded to temporarily deranged the ground, and the recent crushing did not come up to the manager's expectation. A neighbouring property, known as the "Premier," has recently adopted the cyanide process with a result of 148 ounces gold obtained from 62 tons of tailings, and the directors have under consideration the advisability of adopting this process. The property of the company in the Argentine has recently been commented upon, and we have been approached by certain parties with a view to ascertain on what lines the company would be disposed to treat for same. The directors are of opinion that any effort in this direction would considerably benefit the proprietary, but before anything definite is done, the shareholders' views will be asked for on the subject. The directors are pleased to notify that they have availed themselves of an opportunity likely to give exceptional advantages to the shareholders which will in no way interfere with the original programme.

Frontino and Bolivia Gold Mining Company.

The directors have received advices from the mines, dated 22nd January and 8th February, 1894; also a letter from Messrs. Restrepo, dated 11th January. The statement for the month of January is as follows:—2082 tons produced, bullion, 2198 ounces; tributaries' gold produced, bullion, 149 ounces; total, 2345 ounces. Also 44,252 lbs. of sulphurets, valued at £936 11s. 2d. Estimated value of the gold and sulphurets, £5693 8s. 9d.; cost at the mines, Medellin, and in London £4366 13s. 1d. Estimated excess of returns, £1326 15s. 8d. In consequence of the unusually wet weather which prevailed in Colombia for some months, the road from the mines to Zaragoza—by which the boxes of sulphurets are transported to the river for dispatch to England—became very boggy, and the contracting cargo men refused to trust their animals upon it. The sulphurets detained at the mines have, therefore, much increased, and the latest boxes which have arrived in England contained part of the produce of June last. The stock thus accumulated at the mines is of the value of over £2000, and as the costs of winning these sulphurets are charged against the bullion, the amount in question is nearly all profit, temporarily impounded. The dry season having now set in, it is hoped the cargo men may soon resume their contracts and bring the boxes down, but in the meantime the interim dividend usually declared in March must be deferred.

The City and Suburban Gold Mining Company (Limited).

The directors report that for the month of January the income on revenue account amounted to £14,362 10s. 11d.; of this, £14,253 9s. 9d. was realised for gold produced, and the balance £109 1s. 2d. received from other sources. The expenditure on revenue account was £8245 11s. 8d., leaving a profit on the month's working of £6116 19s. 3d. The expenditure on capital account was £18,897 2s. 3d. The total working expenditure per ton was £1 16s. 2-57d., and the profit per ton of ore mined and milled was 12s. 2-59d. The profit per ton on the tailings treated amounted to 17s. 8-542d.

Tolima Mining Company.

The following circular has been issued to the shareholders:—I am instructed by the directors, on the occasion of the payment on the 21st instant of the first dividend in respect of the profits of 1893, to inform you that, notwithstanding the heavy depreciation in the value of silver, they anticipate being able to pay, at intervals of three months, three further dividends of 10s. (making 40 per cent.) per share during the present year.

—The NEW GIPSY GOLD MINING COMPANY (LIMITED) has opened a transfer office at No. 14, Sherborne Lane, Messrs. T. L. Livingstone and T. S. Marshall being the London committee, and Mr. John Morison London secretary.

—THE ELKORNI MINING COMPANY (LIMITED).—Dividend warrants for the 16th dividend of 9d. per share (free of income tax) have been posted this week, to all shareholders registered on the books on the books of the company on 3rd March, 1894.

—THE CHAMPION REEF GOLD MINING COMPANY OF INDIA (LIMITED) has declared an interim dividend (free of income tax) of 2s. per share, payable 12th April, 1894.

—THE DIRECTORS OF THE ORION GOLD MINING COMPANY have declared a dividend at the rate of 10 per cent.

—BARING BROTHERS AND CO. (LIMITED) notify that a dividend of 16 francs (or 12s. 9d. in sterling) per share has been declared against coupon No. 2 of the Colombia Gold Mining Company.

—At a meeting of the board of directors of the ALADDIN'S LAMP GOLD MINING COMPANY (LIMITED), held this week, it was resolved that an interim dividend of 1s. per share, free of income tax, be paid on the 29th March. The transfer books will be closed on the 28th and 29th inst.

—THE SHERRA GOLD MINING COMPANY (LIMITED) notifies that an interim dividend of 6d. per share, free of income tax, will be

paid on April 16 to all shareholders on the register on March 31, and that the transfer books and register of members will be closed from the 2nd to the 14th April, both days inclusive.

—The MINING EXCHANGE will be closed from the 23rd until the 27th inst.

REPORTS FROM THE MINES.

♦♦ We find it necessary to announce that, owing to the vast numbers of mining reports, and items of mining intelligence which reach us invariably very late—up to, and frequently after the time of going to press—it is impossible to guarantee the insertion of all of them in the issue in which, in ordinary course they should appear. We always endeavour, however, to make this important feature as complete as possible, and if the secretaries of mining companies, mining engineers, and others would kindly make an effort to let us have their reports, etc., reach us early on Fridays, when it is not possible to let us have them earlier in the week, their doing so would go far to ensure their insertion, and to promote the completeness of our Mining Intelligence.

BRITISH MINES.

CARN BREA.—March 16: Highburrow West: The shaft is sunk to about 5 fathoms below the 325 fathom level. In the 310 level west we have driven south through the elvan, and are now driving west on what we believe to be part of the lode which produces some good stones of tin. We hope to be far enough west for rising against the rise, and shall communicate as soon as possible. The 298 winze is down 9 fathoms; this has been through a good lode, worth £30 per fathom, present value £15 per fathom. The lode in rise in back of 290 level is worth £20 per fathom.—Highburrow East: Harvey's engine shaft is cleared to about 9 fathoms below the 310 fathom level, and we expect at an early date to clear it to the bottom. The lode in the winze sinking below the 296 fathom level east is worth £12 per fathom. Winze down 11 fathoms. The lode in the 170 end west of crosscut is worth £10 per fathom. In the rise in back of 170 fathom level east £10 per fathom.—Old sump: The engine shaft is down 10 feet below the 256 fathom level. The lode in the last 6 feet sinking has improved, and is producing good stones of tin. The crosscut driving south at the 256 fathom level is driven 7 fathoms, and we are daily expecting to cut the lode. The lode in the 244 fathom level east of crosscut on drive north, lode is worth £8 per fathom; west of crosscut £10 per fathom. All the stopes in the mine as last reported. The contractor is making fair progress in building the new compressor house, and our carpenters have nearly completed the fixing of the woodwork for the roof.—(Signed) W. T. White and Agents.

DEVON GREAT CONSOLS.—William Clemo, March 21: Wheal Anna Maria Engine Shaft: In the stope in the bottom of the 110 fathom level east the lode will yield 10 tons mundic per fathom.—Fried Shaft, South Lode: The stope in the bottom of the 130 fathom level west the lode is yielding 2 tons copper and 10 tons of mundic ores per fathom.—Wheal Josiah, Richard's Shaft: The stope in the bottom of the 103 east is worth 8 tons mundic per fathom.—Agnes' Shaft: The stope in the bottom of the 103 west will produce 3 tons copper and mundic ores per fathom. In the stope in the back of the 90 west the lode will yield 3 tons copper and mundic ores per fathom.—Wheal Emma, Thomas's Shaft: The stope in bottom of 100 east is worth 1 ton copper and 10 tons mundic ores per fathom. In the stope in bottom of the 100 east lode will yield 2 tons copper ores and 18 tons mundic per fathom. Stope in back of 100 east yielding 2 tons copper and 13 tons mundic ores per fathom.—Inclined Shaft: Stope back of 150 east is worth 2 tons copper and 7 tons mundic ores per fathom. In stope in back of 150 east lode also producing 2 tons copper and 7 tons mundic per fathom. Stope in back of 112 west is worth 2 tons of copper and 20 of mundic ores per fathom. The lode in stope back of 100 west is producing 1 ton copper and 5 tons mundic ores per fathom.—New Shaft, New South Lode: Stope in bottom of 190 east is yielding 7 tons mundic per fathom. In stope back of 130 east the lode is yielding 2 tons copper and 3 tons mundic per fathom.—Watson's Engine Shaft: In the 172 east the lode continues promising, yielding 3 tons copper and mundic ores per fathom. In the 160 east lode 4 feet wide producing saving work of copper and mundic ores. In the 148 east lode 3 1/2 feet wide, yielding 4 tons copper and mundic ores per fathom. Stope in back of 172 east yielding 6 tons copper and mundic ores per fathom. Stope in the bottom of the 148 east is worth 4 tons copper and mundic ores per fathom. In the stope back of the 148 east the lode is yielding 5 tons copper and mundic ores per fathom. Stope in back of 136 west is also yielding 5 tons copper and mundic ores per fathom. The weather continues fine, and all the workings underground and at surface are in full operation.

LEADHILLS.—W. H. Paul, 19th March: Brown's Vein: We got the water out of 160 fathom level south of Jeffrey's shaft on the 15th inst. and resumed driving southwards. Vein at this point is over 4 feet wide, composed chiefly of stone, with a little spar, and yielding ore about 5 dwts. per fathom. In the 160 fathom level going north of Wilson's shaft the vein is large, and the portion carried contains a strong mixture of quartz and spar in a promising end. The vein in the winze below 145 north of Wilson's shaft is over 4 feet wide, worth 20 dwts. of ore per fathom. In the stope above the 145 north of Jeffrey's shaft the vein will produce 40 dwts. of ore per fathom. In the stope above the 130 north of Jeffrey's shaft the vein is worth 30 dwts. of ore per fathom. At the 115 fathom level north of Jeffrey's shaft the vein continues of a promising character, and yields good stones of ore. The vein in No. 1 stope above the 115 north of Jeffrey's shaft is worth 60 dwts. of ore per fathom. The clearing out of No. 2 stope above the 115 north of Jeffrey's shaft is being proceeded with regularly. In the No. 3 stope above the same level north the vein is worth 45 dwts.

of ore per fathom. In the 115 fathom level south of Wilson's shaft the vein is above 4 feet wide, composed of stone too dark and dried for the production of ore. The 100 fathom level north of Jeffrey's shaft is in a large run well mixed with spar and quartz, and containing a little ore. In the stope below the 100 north of Jeffrey's shaft the vein is worth 30 cwt. of ore per fathom. The 100 fathom level south of Wilson's shaft is being driven in a vein over 4 feet wide, carrying a branch of spar about 2 feet wide, and we anticipate an early improvement at this point. The winze below the 85 south of Wilson's shaft has been communicated to the 100 fathom level some 2 fathoms behind the forebreast, which has given good ventilation, and we have placed the men to drive on an eastern portion of the vein at the 85 south, which is worth 30 cwt. of ore per fathom. The vein in No. 1 stope above the 85 south of Wilson's shaft is producing 50 cwt. of ore per fathom. No. 2 stope is worth 25 cwt. of ore per fathom. No. 2 winze sinking below the 70, south of Wilson's shaft, is yielding a little ore at times. The stope above the 50 south of winze is worth 50 cwt. of ore per fathom. The stope below the 35 south of Flat-rod shaft the vein will produce 80 cwt. of ore per fathom. The stope over the 35 south of ditto is worth 35 cwt. of ore per fathom.—Sawtooth vein: Gripp's adit south of George's Roust vein is in a vein 5 feet wide, containing a mixture of quartz and brown stone, and letting out water, but without ore.

SOUTH FRANCES UNITED.—March 20: Setting report: The 285 fathom level to drive west of Pascoe's by six men and three boys with a boring machine at £7 per fathom. Lode worth £10 per fathom. A stope in the back of this level is worth £12 per fathom. Stopping by four men at 4s. 6d. per fathom. At the 246 fathom level driving west we have met with a crosscourse which has thrown the lodes south 4 fathoms, which we have again intersected and cut into from 4 to 5 feet, which is being driven by six men and three boys with a boring machine at £7 per fathom. The lode at present is worth £25 per fathom; we believe we shall still have a further improvement. A stope in the bottom of this level is worth £13 per fathom. Stopping by 12 men, at 5s. 6d. per ton. A stope in the back of this level is worth £13 per fathom. Stopping by four men at 4s. 6d. per ton. A stope in the back of the 144, west of Grenville's, is worth £10 per fathom. Stopping by six men, at 3s. 9d. per ton. A stope in the back of the 134, west of Grenville's, is worth £12 per fathom. Stopping by 14 men, at 5s. per ton. The 124 fathom level to drive west of Grenville's, by four men, at £10 10s. per fathom. Lode worth £11 per fathom. A rise in the back of this level by two men, at £7 per fathom. Lode worth £10 per fathom. A stope in the back of this level is worth £12 per fathom. Stopping by eight men at 3s. per ton. Danbury's shaft to sink below the 100 fathom level to be carried 14 feet long and 7 feet wide by 18 men at £30 per fathom. Men to provide all their costs. We are making good progress in sinking this shaft at the rate of nearly 5 fathoms per month, which is very important to us seeing that our rich lode at the 245 west is just below this point. In our tribute department we have 63 pitches working by 162 men on tributes varying from 7s. to 13s. 4d. in the £, the standard for tin being £39 per ton.—(Signed) William Hooper, John Ogle, Richard Williams, Wm. Hy. Richards.

WEARDALE.—Report on Wardale Company's mines for week ending March 17: Groverake: Slate sill drift west vein looking rather better, but forehead stopped for present, and worth 12 cwt. per fathom. Firestone drift east vein continues sparry and rather better for ore, and worth 12 cwt. per fathom. Crosscut north from Maddison's drift, it is thought that a portion of the vein must be off here, Adamson's drift west unchanged, and worth 12 cwt. per fathom. Firestone drift west, strong sparry vein; firmer to work, poor in ore, worth 6 cwt. per fathom. 60 fathom level east vein more sparry and firmer to drive; very poor in ore. Groverake cubic fathom stopes worth 10, 12, 10, 18, 14, 10, 12, 10, 14 and 12 cwt. per fathom.—Boltburn: Crosscut south from Watt's level ground still very flat, with some small bunches of ore, but hard to drive, worth 8 cwt. per fathom. Forster's crosscut north the forehead looks more flat, worth 10 cwt. per fathom. Driving east from Paul's ground worth 10 cwt. per fathom. Stopes worth 30, 8, 34, 34, 26, 32, 20, and 30 cwt. per fathom. Greenlaw's: Watson's drift in plate under 6 fathoms hazel no change. The rise to Nattrass Gill drift is holed. Nattrass Gill drift, no change, worth 12 cwt. per fathom; stopes worth 14, 16, 14, 14, 16, 26, 20, 26, 18, and 12 cwt. per fathom. Lowe's drift, no change; crosscut south composed of limestone, hard rider, and spar. Lee'sump, strong sparry vein, well mixed with ore, worth 20 cwt. per fathom. Stopes in Killhope mine worth 16, 14, 14, and 14 cwt. per fathom. Craig's Level: Groverhead flats worth 16 cwt. per fathom. Bedding: The 56 fathom level is now opened 101 2-6ths fathoms east from drawing shaft; ground difficult; crosscut north from bottom of shaft in scar limestone, have driven 9 5-6 fathoms, and the flat is very strong, but the vein is not yet out. The 64 fathom level east is driven 39 3-9 fathoms, vein composed of good floor spar and ore, worth 16 cwt. per fathom. The 64 fathom level west is driven 26 5-6 fathoms, vein in plate, strait chiefly spar. Stopes in 64 level east and west worth 14, 12, 14, 14, 16, 16, and 12 cwt. per fathom. are raised for week, 90 tons; ore dressed for week, 96 tons; ore and slag smelted for week, 133 tons, producing 70 tons of pig lead.

COLONIAL, INDIAN, AND FOREIGN MINES.

ALMADA AND TIRITO.—Report for the month ending February 24: Dios Padre: The 350 level driving north has been extended 21 feet 7 inches by three men. The lode is poor, containing porphyry with stringers of quartz. The 350 level driving south of Pacheco's winze has failed slightly in value, but continues to yield some good stones of green ore. Drivage for month, 16 feet 6 inches. The 250 level driving north has been driven 25 feet 7 inches, by four men, making a total length from the crosscut 554 feet 1 inch. The lode looks promising, and is carrying a good east wall. In the 250 level driving south the ground is exceedingly hard, consequently our progress is slow, 7 feet 2 inches having been driven by two men. Total length from crosscut equals 373 feet. Stopes: The stopes in the back of the 156 level north of Cruz Verde are not so productive. The stope back of the intermediate below the 12 fathom level is yielding paying quantities of ore.

CHIAPAS.—Mine report for fortnight ending February 14: Providencia No. 2 rise west advanced 11 feet 5 inches, making a total of 21 feet 3 inches; discovered ore rising on same; gold contents low; silver and copper high. Santa Fe drift advanced 1 foot 7 inches, making a total of 27 feet 10 inches; pay streaks about 24 feet; poor, taken throughout. Santa Fe winze No. 4 advanced 34 feet, making a total of 8 feet 1 inch; holed through to rise below. Taylor west No. 2 rise advanced 4 feet 11 inches, making a total of 16 feet 1 inch; holed through to winze No. 4. Santa Fe winze No. 2 advanced 6 feet 6 inches, making a total of 42 feet 8 inches. Cut second station for pump and lowered pump into position; no change in bottom; easy breaking ground. Taylor winze No. 3 advanced 4 feet 10 inches, making a total of 22 feet; no change; hard in bottom. Taylor No. 3 stope extracted 238 tons of ore, somewhat poorer in quality. Taylor south-west branch stope extracted 68 tons of ore; pay ore, but poor. Santa Fe stope extracted 92 tons of ore, rather low in quality, and not as good as reported in bottom of this Santa Fe stope. Santa Fe drift extracted 62 tons of ore. Old Providencia extracted 66 tons of ore, very good quality of stone. Rise in Providencia No. 2 west extracted 62 tons of ore; struck ore; silver and copper contents high, gold low. Much sickness in camp, short of labour in consequence.—Signed, B. T. McCarthy, superintendent.

ELKHORN.—Copy of Mr. C. A. Molson's monthly report for February: Mine: Ore breaking department: 650 feet level south back stope: The vein is 2 feet 6 inches wide, and assays 28 ounces. The ore is making into the footwall again.—No. 2 stope: The vein here carries less lead than usual, the value being 44 ounces and three per cent. lead for an average of 3 feet. The old workings above the stope are yielding dry porphyry ore, assaying 30 to 35 ounces, which helps to form a desirable mixture for the mill.—750 feet level north, cross cut raise stope: The vein is 4 feet wide, and the value 45 ounces. A small amount of lead ore is being sorted out from the dry quartz.—Inside stope: The vein is 12 feet wide, and the value 40 ounces.

Some high grade lead ore occurs on the footwall in the centre of the stope.—850 feet level north: The vein is 6 feet wide, and the average value 37 ounces. A band of carbonate ore, assaying 50 ounces and 30 per cent. lead, lays on the dry quartz. Its width is 10 inches to 15 inches.—950 feet level north: The vein is 5 feet wide, and the value 40 ounces. The stope is all in dry ore. 1050 feet level south, back stope, the vein is 6 feet wide, and the average value 54 ounces. On the hanging wall side there is 2 feet of lead ore, assaying 75 ounces and 8 per cent. lead. North of the shaft the vein is 4 feet wide, and the value 35 to 40 ounces. Connection has been made from the top of the old stope to the 950 feet level. The ore is regular, and all of the milling class. Raise stope, the vein is 2 feet wide, and the value 30 ounces.—1150 feet level south: Work has been stopped here temporarily pending the timbering of the stope below, which shows signs of weakness in the roof. 1250 feet level north raise stope, the vein is 30 inches wide and assays 30 ounces with some bunches of lead ore. 1350 feet level south footwall lead chamber, the vein is 2 feet wide, and the value 175 ounces and 15 per cent. lead. Some high grade dry ore is found below the smelting ore. A crosscut is being run from the level to prove the downward extension of this body of high grade ore.—South end raise: Connection has been made with the 1250 feet level. The vein as opened is 6 feet wide, with ore still in the foot. The value is 55 ounces and 6 per cent. lead. 1450 feet level south, the vein is 4 feet 6 inches wide, and the value 125 ounces and 10 per cent. lead. The ore is showing partial oxidation as it approaches the 1350 feet level. Some bunches of high grade lead ore are found at the north end of the stope.—South end stope: The vein is 2 feet wide, and the value 42 ounces.—North of shaft: The vein is 2 feet wide, and assays 55 ounces. The ore occurs in rich stringers in the sandrock.—1550 feet level south, raise stope: The vein is 5 feet wide, and the value 50 ounces. The footwall portion is mainly smelting ore, assaying 100 ounces and 10 per cent. lead.—North of the shaft, raise stope: The vein is 2 feet wide, and assays 30 ounces.—Prospecting department: 1650 feet level south: Previously reported, 13 1/2 feet; advanced in February, 203 feet; total length March 1, 216 1/2 feet. Several bands of hard slate have been passed through, but the face of the drift is now in regular iron-stained sandrock, similar to that usually met with in the drifts south of the shaft. No work has been done in the north drift, and all other prospecting work has been suspended for the time being.

Amount and Source of Ore Hoisted.—Level 650, 43 cars; level 750, 147 cars; level 850, 191 cars; level 950, 302 cars; level 1050, 304 cars; level 1150, 145 cars; level 1250, 116 cars; level 1350, 201 cars; level 1450, 548 cars; level 1550, 29 cars = 2026 cars. No. of tons 1152.—Milling Department: The mill made its usual steady run during the month, the delays being due to the incidental and regular repairs of worn out castings.—Table of Work Performed in February: Ore on hand February 1, 1894, 60 9/4 tons; raised from the mine, 1152 tons; less smelting ore, 182 9/2 tons; waste sorted out, 171 tons, 353 9/2 tons, 798 0/2 tons; add for salt, 149 7/9 tons; dry ore panned, 926 8/4 tons; pulp in the mill, 17 9/7 tons; rough ore in stock, 64 tons; total, 1008 8/1 tons.—1008 8/1 tons.—Table of mill work: Dry tons panned, 926 8/4 tons; average assay value, 38 6/4 ounces; average percentage salt used, 14 per cent.; average value of tailings, 2 5/5 ounces; average percentage saved, 94 2/1 per cent.; No. of Doré bars produced, 42; No. of ounces fine silver, 36,268 8/3 ounces; No. of ounces pure gold, 24 835 ounces; batteries in service, 26 days; pans in service, 27 days; estimated value of bullion shipped, \$21,430; actual returns for ore shipped, \$11,034 2/4; total, \$32,464 2/4. Current expenses, including salaries, labour, and supplies, \$21,695 5/4; balance, being profit for February, 1894 (or at \$4 85 to £ sterling = £2220), \$10,768 7/0.—Surface department: Fuel: The usual supply of fuel is coming in over the tramway.—Dust Chamber: We are putting in an additional dust chamber in the mill to further reduce the loss from this source. The weather has been a little warmer, and the snow has settled down. Everything about the works is in good order.

GELDENHUIS ESTATE AND GOLD.—Elandsfontein No. 1: According to cable advices received this morning from the head office at Johannesburg, South African Republic, an interim dividend of 20 per cent. has been declared, payable to all shareholders registered on the 11th of April, 1894. The transfer registers will be closed from the 12th to 16th April, both days inclusive, and the dividend warrants will be issued immediately after the arrival at Johannesburg of the return of transfers lodged for registration at the London office of the company, 29 and 30, Holborn-viaduct, E.C. up to four p.m. on Wednesday, the 11th day of April. Further 12,500 shares, of the nominal value of £1, are to be offered at £4 5s. per share to shareholders, *pro rata* to their registered holding on the evening of Wednesday, the 11th proximo, this issue being guaranteed by the board of directors. The list of applications to be closed on 16th April. Cyanide works are expected to commence operations about June, thereby largely increasing the profits.

GOLD FIELDS OF MYSORE.—Fortnightly report on prospecting operations dated 28th February:—West Balaghat Block, No. 1 shaft, south drive at the bottom of this shaft has been driven a total distance of 28 feet. Lode in the face 1 foot 10 inches wide, assaying 15 dwts. of gold per ton. North drive has been driven a total distance of 17 feet 6 inches. Lode in the end 1 foot 8 inches wide, assaying 10 dwts. of gold per ton. No. 2 shaft has reached a total depth of 112 feet. Lode in the bottom 1 foot 6 inches wide, assaying 14 dwts. of gold per ton. South drive 100 feet from surface has been driven a total distance of 54 feet. Lode in the end 8 inches wide, assaying 1 ounce 5 dwts. of gold per ton. North drive 100 feet from surface has been driven a total distance of 45 feet 1 inch. Lode in face 1 foot 4 inches wide, assaying 14 dwts. of gold per ton. No. 3 shaft has been sunk to a total depth of 117 feet. Lode in the bottom 2 feet wide, assaying 13 dwts. of gold per ton. Having a great amount of water we could not sink further with a tackle, we stopped the sinking and have put the coolies to drive both north and south of the bottom of shaft. South drive has been driven 15 feet 6 inches, total distance 15 feet 6 inches; lode in the face 1 foot 6 inches wide, assaying 12 dwts. of gold per ton. There has not been much done in the north drive, it being rather hard and spare. The lode is a pretty looking one and is 2 feet wide yielding a little gold by pan washing.—No. 4 Shaft: The sinking of this has been hindered by the running away of the contractor, which left the water in. We have now engaged a new set of coolies, they are now engaged taking out the water and are blasting the sides of the shaft to make it larger.—Road Block, No. 2 Cut North, No. 2 on Eastern Lode: The shaft in this cut has been sunk 25 feet, total depth 35 feet; lode in the bottom 2 feet wide, assaying 8 dwts. of gold.

NEW QUEEN.—The following fortnightly report has been received from the mine, dated Charters Towers February 2: Stopping has been continued over No. 4 south level. The formation is in places about 8 feet in width, the reef being very irregular, with portions of blank ground varying in size from 3 inches to 1 foot. The appearance of the reef is somewhat whiter, and not carrying so much mineral; this may probably prove to be a patch, and may improve during the coming fortnight. No. 5 south level has been extended a further distance of 15 feet, making a total distance of 158 feet from underlie shaft. The reef in the end of level averages about 7 inches. Stopping has also been carried on; the reef during the fortnight has been bunched, consequently we have not been able to raise as much stone from this stope as usual. No. 5 level north has been extended a further distance of 18 feet, making a total distance of 96 feet from underlie shaft. The vein of quartz mentioned in my last report has cut out. The ground during the fortnight has been very hard granite, with about 6 inches of formation, which opened out yesterday to about 3 feet in width, with a few thin veins of quartz. A little stopping has been carried on over this level, the reef averaging about 4 inches.—No. 2 Level South: A contract has been let to sink a winze on the boundary of the Brilliant Central lease to try and find the reef worked by that company.—No. 4 Formation: Stopping has been carried on over the northern level on a reef averaging about 9 inches. This stope is being carried up as fast as possible, so as to intersect the level being driven from the bottom of the straight shaft. The level from the straight shaft has been extended a total distance since we commenced in the beginning of the year of 30 feet, making us clear of shaft at present 12

feet. Three shifts are now employed both on the level and stopes, and I expect to hole in about a month from this date.—Quantity of stuff raised during the fortnight: No. 3 level south 12 trucks, No. 4 level south 228 trucks, No. 5 level south 116 trucks, No. 4 formation 102 trucks; total, 458 trucks, or about 330 tons.—(Signed) W. Henderson.

OOREGUM.—Superintendent's report for fortnight ending February 27: Taylor's shaft has been sunk 5 feet 9 inches, total 48 feet 9 inches below the 460 feet level. Lode 1 foot 6 inches, value 1 ounce 17 grains. 460 feet level south advanced 27 feet 6 inches, total 127 feet 6 inches. Lode 2 feet, value 1 ounce 1 dwt. 19 grains. 360 feet level south advanced 10 feet, total 533 feet 3 inches. Lode 9 inches, assaying 10 dwts. 21 grains. No. 3 winze 360 feet level south sunk 6 feet, total 45 feet 3 inches. Lode 2 feet 6 inches, value 13 dwts. 2 grains. Wallroth's shaft sunk 17 feet 9 inches, total 789 feet 9 inches. Lode 2 feet, value 1 ounce 13 dwts. 2 grains. 760 feet level south advanced 7 feet 6 inches, total 37 feet 6 inches. Lode 1 foot 6 inches, value 1 ounce 6 dwts. 10 grains. 760 feet level north advanced 3 feet 9 inches, total 37 feet. Lode 1 foot 3 inches, value 15 dwts. 10 grains. 660 feet level south advanced 28 feet, total 377 feet. Lode 1 foot 9 inches, value 1 ounce 1 dwt. 19 grains. No. 1 winze 660 feet level south sunk 4 feet, total 38 feet 6 inches. Lode 1 foot, value 1 ounce 11 dwts. 14 grains. No. 2 winze sunk 4 feet, total 14 feet. Lode 1 foot, value 10 dwts. 20 grains. No. 1 winze 660 feet level north sunk 3 feet 3 inches, total 20 feet 9 inches. Lode 4 feet, value 2 ounces 17 dwts. 10 grains. 560 feet level south advanced 29 feet, total 763 feet 3 inches. Lode 1 foot 6 inches, value 1 ounce 9 dwts. 19 grains. No. 2 winze 560 feet level south sunk 4 feet, total 49 feet. Lode 6 inches, value 1 ounce 14 dwts. 20 grains. No. 4 winze same level sunk 2 feet 3 inches, total 44 feet 9 inches. Lode 1 foot, value 10 dwts. 20 grains. No. 5 winze sunk 8 feet 3 inches, total 25 feet 9 inches. Lode 2 feet, value 2 ounces 5 dwts. 17 grains. No. 6 winze sunk 5 feet 6 inches, total 15 feet 6 inches. Lode 2 feet 6 inches, value 2 ounces 6 grains. No. 3 winze 460 feet level south sunk 2 feet 6 inches, total 25 feet 6 inches. Lode 3 inches, value 2 ounces 1 dwt. 9 grains. No. 5 winze same level sunk 6 feet 3 inches, total 87 feet 9 inches. Lode 2 feet, value 1 ounce 17 grains. No. 6 winze sunk 7 feet, total 60 feet. Lode 3 feet, value 16 dwts. 8 grains. No. 7 winze sunk 9 feet, total 53 feet 6 inches. Lode 3 feet, value 17 dwts. 10 grains. Level south east on apparent fold from 215 feet level north advanced 13 feet 6 inches, total 41 feet 6 inches. Lode 1 foot 6 inches, value 3 ounces 14 dwts. 10 grains. Low's shaft sunk 5 feet 3 inches, total 542 feet 4 inches. 510 feet level south advanced 7 feet 3 inches, total 85 feet 9 inches. No. 10, Crosscut west from 510 feet level south advanced 3 feet 6 inches, total 9 feet 6 inches. Yesterday we intersected a branch of quartz in this crosscut 10 inches wide. We washed a sample this morning, which gave a fair show of free gold. Intermediate level north back 200 feet level south advanced 4 feet, total 71 feet. Now suspended.—Probyn's shaft 950 feet level south advanced 6 feet, total 34 feet. No. 10, 950 feet level north from crosscut east advanced 19 feet, total 60 feet. Lode 6 inches, value 15 dwts. 6 grains. End suspended on nearing the boundary. A winze has just been commenced in this level, 3 feet sunk. Lode 1 foot. No sample taken. 850 feet level south advanced 11 feet, total 173 feet 9 inches. Lode 9 inches, value 6 dwts. 12 grains. No. 1 winze 850 feet level south sunk 5 feet 6 inches, total 16 feet. Lode 6 inches, assaying 8 dwts. 17 grains. No. 1 rise 850 feet level south 4 feet risen, total 10 feet 6 inches. Lode 1 foot 3 inches, value 7 dwts. 15 grains. No. 2 winze, 650 feet level south sunk 3 feet, total 41 feet 6 inches. Lode 4 inches wide; no sample. No. 2 trial shaft sunk 8 feet, total 208 feet. Lode 3 feet 6 inches, value 17 dwts. 10 grains per ton. There are 40 stopes working throughout the mine, which will be measured and reported in the next report.—Erections: With the exception of fixing a few steam pipes which we are daily expecting from Madras, the erection of No. 3 Walker's air compressor is completed. It will start to work in a few days.

TRANSVAAL GOLD EXPLORATION AND LAND.—Production for month of January, as per general manager's advice, dated February 21:—From battery, 255 ounces; pans, 1172 ounces; cyanide process, 872 ounces; total, 2299 ounces; 36 1/2 tons of Na ore treated in the pans yielded 463 ounces, equal to 12 ounces 16 dwts. 1 grain per ton. The average assay value of the ore mined during January was 3 ounces per ton.

THE BANK OF AFRICA (LIMITED).—The ordinary general meeting was held on Wednesday, March 21, at the Cannon-street Hotel.—Mr. W. Fleming Blaine presided. In moving the adoption of the report, the Chairman stated that the financial and commercial depression, and the distrust and absence of enterprise on this side, had naturally reacted very unfavourably on the other side. They had forced down the price of products from the Cape to an abnormally low level, had kept trade in a state of stagnation, and in the Transvaal itself had produced a serious crisis. They had also had to contend against two local troubles—a severe drought and a plague of locusts—but these had now disappeared. In spite of these unfavourable factors they had earned in the half year the handsome net profit of £20,371, which enabled them, with the amount brought forward, to pay their usual dividend and bonus, to add £5000 to the reserve fund, increasing it to £130,000, and to carry forward the exceptionally large sum of £9733. That the moderate shrinkage shown in the deposit and current accounts did not betoken any loss of public confidence was proved by the fact that they had a greater number of fixed and current deposits than they had when they last met. The reason they carried forward the exceptional amount of £9733 was owing to a robbery in Johannesburg. It was effected during the clearance by some expert thieves substituting for the bag containing the banknotes an almost identical one filled with old papers to make up the necessary weight. It was a most unfortunate affair, but investigation had shown that it was no worse aspect than gross negligence, for which the three officers responsible had been dismissed. He then referred to the continued increase in the production of gold, to the prosperity of the diamond fields, and to the progress of South Africa generally, and spoke hopefully of the prospects of the bank.—Mr. John Young seconded the motion, which was adopted.

THE KERN COUNTY MINES.—Gus Routh, a prospector, recently went from Porterville, Tulare County, to the new Kern County Mines, and he writes thus to the *Enterprise* regarding the district. The climate here is fine, about the same as Porterville; some colder nights; no rain or snow, and very little wind. The altitude is 3100 feet, the nature of the country volcanic—three or four extinct craters in a radius of 10 miles. Two of the mines are paying well, averaging from \$3 to \$15 per day to the man. There are some 40 or 50 men here, all sociable, jolly fellows, always ready to help their fellow man. Considering the time we have been here we are doing well, and have bright prospects ahead of us. We have some good claims. A large portion of the land in this district is located, but claims can be bought at nominal figures. [For the benefit of anyone wishing to come I would suggest that they come via Tehachapi to Camerton. At that point leave the railroad to the right. Six miles from Camerton you intersect with the old Borax road one of the best in the State. It is 16 miles from there to Red Rock, 26 to Goler, and 43 to the Summit. On starting bring provisions to last six weeks, as you may want to return, and money to buy a dry washer. They cost from \$30 to \$75. Nothing can be accomplished without one. And do not expect to find nuggets on top of the ground, or growing on bushes. You may expect to meet with many hardships, and will have use for a pick and shovel. Hay is worth from 15c. to 20c. per lb. barley \$1.50 per sack, and can be bought at Red Rock, Goler, Kane, and Mosquito Springs—all along the line of travel. Six miles from Camerton, at the junction of the Borax road, there is plenty of good water; five miles from Red Rock station, plenty of water; Kane, spring water for stock; Mosquito Springs, good water; and four miles from us as good water as can be had anywhere. All it costs is to help yourself. Our nearest post-office is Koehn, 26 miles west, in the Goler district.

ANGLO-MEXICAN.—Writing on the 8th February the manager says respecting the newly-acquired gold mine at San Jose de Gracia:—Guadalupe tunnel: Since reporting to you last on our progress in this drift no change has taken place here so far as the width of the ore encountered is concerned, but I am pleased to say that quite an improvement has taken place in the grade. A sample taken from the full width of the vein yielded 3.4 ounces in gold, 3.2 ounces in silver, which is a remarkable improvement over the preceding week.—Ore account: Preparations have already been made for the extraction of a further lot of from 15 to 20 tons of high-grade ore for shipment, and in my report for the present week I shall be able to hand you further particulars regarding the quantity which has thus far been taken out and made ready for shipment.

AUSTRALASIAN MINING.—Fortnightly report of Mr. John James, manager, dated February 1: In the underhand stope going north on the Orient reef, the crushing stuff keeps about the same and shows a little gold. The stopes over the level going south show about the same amount of crushing stuff with a little gold.—690 feet level: In the stopes over this level there is still a good body of crushing stuff showing fair gold at times. We cleaned up on the 30th January, from 349 tons for a return of 237 ounces 6 dwts. 12 grains of smelted gold. The battery is crushing as usual. There are 40 men employed, 30 on the mine and 10 at the battery. Everything about the mine, winding engine and battery, is in good working order.

ALAMILLOS.—Mine report dated 14th March: In the 160 fathom level driving west of Taylor's engine shaft, the lode continues to produce good stones of ore, and is worth $\frac{1}{2}$ ton per fathom. The lode in the 160 west of Judd's engine shaft, worth 2 tons per fathom has a good appearance. In the 100 east of the same shaft the lode has fallen off somewhat in value, worth 1 ton per fathom. Isidoro's winze sinking below the 70 fathom level, the lode produces a little lead but not enough to value.

BURMA RUBY.—The result of mining for the six weeks ended March 17 was 3465 loads washed producing rubies valued at Rs.7500, or an average of 2s. 83. per load. A new and a much less expensive system of valley mining at Kypatpyn is being successfully carried out. The new level adit at Panma, which is being driven day and night, is nearly finished, and it is expected that large quantities of ruby earth will be available for washing next month. Good rubies should also be found in the Pingutaung crater, which has at last been reached.

COROMANDEL.—Superintendent's report for fortnight ending February 24: Coromandel shaft, 420 feet level north, driven 13 feet 6 inches; total 43 feet 6 inches from crosscut. The quartz leader is still very narrow, being about 3 inches wide in the present end.—420 Feet Level South: This has been driven 9 feet from crosscut, and the lode, which was 18 inches wide when we started, now carries only 3 or 4 inches of quartz.—320 Feet Level North: The improvement in this level has continued. The lode is now 3 feet wide and assays 10 dwts. per ton; driven 21 feet 6 inches; total from crosscut 278 feet 6 inches. Prospect shaft sunk 9 feet 6 inches; total depth 456 feet 6 inches.—500 Feet Level South of Winze: This has been driven 12 feet, and during the coming fortnight should re-enter the shoot followed in the winze before we met the crosscut.—440 Feet North East: This level has been driven during the fortnight 28 feet, and is still in the dyke.

COLOMBIAN HYDRAULIC.—A. FitzGibbon, 12th February: Run No. 191: I cleaned up from the south run, and cabled the result to the board on 3rd February, and at once turned the water on to Clark's bank, and everything is in good running order.

CRAVEN'S CALEDONIA.—The fortnightly report has been received from the mine, dated Charters Towers, February 1: During the past fortnight No. 9 level has been driven a further distance of 9 feet, making a total of 161 feet from the slide. The reef in No. 1 stope remains about the same, and is 10 inches. In No. 2 stope it is pinched a little. In the other three stopes it will average 8 inches. No. 8 level has been extended 10 feet by Jones and party, contractors, which makes a total of 183 feet from the slide, and the reef still remains about 8 inches. In No. 1 stope the reef is also 8 inches, and in Nos. 2, 3, 4, 5 stopes about 5 inches. In No. 7 stopes the reef will average 6 inches. No. 6 level has been extended a further distance of 8 feet, which makes a total of 309 feet from the slide. The reef is about 9 inches thick in this level. I have started a stope from this level on about 10 inches of stone. I have had No. 6 plat repaired, put a new door on, and altered the gauge of the road, as it was about 6 inches wider than any of the others in the mine; everything is now fixed, and working splendidly. I started a winze on the south side of the underlie in No. 4 level about 18 feet from the plat on the 22nd January, and it has been sunk 10 feet. There is about 4 inches of quartz on the hanging wall, also about 4 feet of formation with leaders intermixed. A new road has been laid down, and some new timber put in the above plat. The haulage of quartz for the fortnight is 110 tons, making a total of 135 tons in paddock.—(Signed) G. Cabassi.

EAGLEHAWK CONSOLIDATED.—The following is an abstract of the mine managers' report, dated Maldon, February 3:—During the fortnight the contractors for sinking the Limited Shaft have sunk a further distance of 29 feet, making the shaft 70 feet below the plat at the 726 feet level, and 796 feet from the surface. The ground is clean hard blue stone. The tributaries, Smith and party, are getting a little gold.—Signed, Thomas Hodge.

FORTUNA.—Mine report dated March 14: Canada Inco's Mine: The lode in the 150 fathom level driving west of O'Shea's engine shaft is small and without value. In the 110 west of San Pedro's shaft the lode is large and strong, and is worth $\frac{1}{2}$ ton per fathom.—Los Salidos Mine: 200 east of Taylor's engine shaft, worth 2 tons per fathom, the lode continues regular and strong. In the 105 east of Palgrave's shaft, the lode only contains a small string of ore. Cordova's winze sinking below the 188 fathom level, worth 2 tons per fathom, this is going down on a strong compact lode. No change of importance has been undergone in the stopes during the past month. Surface works are kept on very regularly, and the machinery is in good working order. Estimated raisings for March 300 tons. The tributaries returned 79 $\frac{1}{2}$ tons of minerals in the past month.

FRONTINO AND BOLIVIA.—La Salada, February 8: Silencio: The sinking of the main shaft has proceeded uninterruptedly for the fortnight under review, and fair progress has been made. Driving in the 450 feet cross cut has also been satisfactory, and we shall endeavour to reach the lode as soon as possible. The disordered condition of the 400 feet level north still continues, but there are indications of a speedy improvement. A rise is being put up in the back of this level to communicate with the No. 2 winze below the 340; when completed, this will materially increase our stopping ground. The southern drive in the 400 feet level has fallen off in yield. The 340 feet level north has been holed to the No. 5 winze below the 286, and is now advancing north of this winze on a lode 2 feet wide, of average quality ore. It is intended to extend this drive as far north as possible, to thoroughly prove the extensive run of unwrought ground in that direction. The large formation seen in the forebreast of the 340 feet level south is of little value, consisting of numerous veins of hard quartz, alternating with bands of congeal granite. The general condition of the 286 feet level south is much the same as when last reported. The ventilation winze in the bottom of this level has been holed to the 340; a great improvement in the ventilation of this latter level may therefore be relied on. Stopping throughout the mine goes steadily on, and the 45 stamps are in constant work with satisfactory results. The re-timbering and opening of the south shaft has proved to be a longer job than we anticipated, but is proceeding as rapidly as circumstances will permit. Preparations are in hand for the erection of similar hoisting gear to that at the Salada shaft, instead of the old whim from Cecilia, as originally intended.—La Salada: Communication has been effected between the two crosscuts, and thorough ventilation again established. Work has been resumed in the mine, and the extraction of ore is having first attention. Of course, after such a prolonged submergence, there are several points which need re-timbering, and which must be immediately attended to; but this will not now interfere with the output, and the constant running of the mills. The lode in the No. 6 end south is fully 6 feet wide of rich ore, and stopping has been commenced in the back of this level. This No. 6 level, as

you are aware, advances towards the old La Salada Mine, though at a much deeper level than that mine ever attained; its great importance is therefore obvious. I have decided to reopen the ventilation shaft which collapsed during the recent wet season, and this work has been started. The new hoisting gear is working well, and is admirably adapted to wind from comparatively shallow depths.—Cordoba: The No. 7 level south became so impoverished that it was deemed prudent to suspend driving, and this was accordingly done. The northern level carries a lode 3 feet wide of fair quality ore, this is now about underneath the winze sunk in Rosario, and we shall endeavour to communicate as soon as possible. Tigrillo, Marmajon, and Marmajito: There is no change in the condition of the cross-cut at La Hamedad. Explorations have been started on the outcrops in the Hamedad Valley, but as yet I deem it premature to express a decided opinion on them. Crushing has commenced in the new mill on ore deposited at the mouth of the old No. 5 level and excavated in the back of the southern level. At Marmajon the deep level cross-cut still advances slowly, owing to the extreme hardness of the rock. The No. 2 cross-cut at Marmajito advances satisfactorily. The ventilation rise makes fair progress, and so does also the sinking from surface to meet it. Three buddles are being fixed in the mill for concentration of sand.—Geo. W. Rustice.

GRAVEL GOLD.—W. St. D. Griffith, January 27: Run No. 6 (La Corona bank: I have cleaned up the head of the sluice after a run of 149 days, during which time I have washed 942 $\frac{1}{2}$ hours. The gross returns are \$4403 gold. The length of this run is accounted for by the following circumstances:—1. The tremendous land slide brought down in the San José ditch by the earthquake of October 3, which took two months to repair. 2. On December 23 the Rica syphon failed in two places, and on December 24 the Reposo syphon, necessitating a delay of three weeks for repairs. 3. The weather has been exceptionally bad throughout the run. I am taking another run off the Corona bank in order to break through the rim to lay the new pipe line. The deposit is now opened up from rim to rim, and varies in height from 50 to 170 feet. The gravel continues the same and there is no hard pipeclay. Should I be able to keep the water continuously on the mine, I hope to make a substantial profit this run. The Rica, Reposo, and San José syphons are at present giving no trouble, but the Rica syphon gives me considerable anxiety, and as soon as I have broken through the rim I shall take the first opportunity of bringing the water into the mine by the new ditch.

GOLD FIELDS OF MYSORE.—Mine report for fortnight ending February 26: Oriental Lode: South Shaft: The 470 feet level north of shaft has been driven 4 feet 6 inches, total length 68 feet. Lode pinched a little, is now $\frac{1}{2}$ foot wide, assaying 1 ounce 2 dwts. of gold per ton. 470 south driven 5 feet, total length 63 feet. Lode 1 foot wide, assaying 18 dwts. of gold per ton. The 380 feet level north has been driven 3 feet 3 inches, total length 175 feet 4 inches. Lode 1 foot wide, assaying 1 ounce 8 dwts. of gold per ton. 380 south driven 5 feet, total length 150 feet 9 inches. Lode 3 feet wide, assaying 1 ounce 3 dwts. of gold per ton. The 280 cross cut east has been driven 3 feet 3 inches, total length 208 feet. No change in the strata as yet. Prospecting work is being pushed ahead, and I am sending you a report on the different operations by this mail.

KEMPINKOTE.—Superintendent's report for fortnight ending 27th February: Garland's shaft has been sunk 8 feet, making a total depth of 129 feet 3 inches: the rock is hard, and the water very quick. Henty's shaft has been sunk 6 feet, making a total depth of 161 feet.—Prospecting: No. 4 pit north drive has been extended 15 feet, making a total length of 65. The end is still in old workings. Our progress has been delayed on account of some large rocks which had to be blasted. No. 6 pit east cross cut has been driven 26 feet 6 inches, making a total length of 33 feet 7 inches. We ought to cut into old workings shortly.

LINARES LEAD.—Mine report, dated March 14: Pozo Ancho mine: The lode in the 200 fathom level driving west of Peill's engine shaft, worth 2 tons per fathom, has improved during the past fortnight. In the 155 west of the same shaft the lode is small, yielding a little ore but not sufficient to value. The 178 west of Warner's crosscut the lode is very wide and spotted throughout with lead ore. No. 275 winze sinking below the 135 fathom level the lode is small, consisting chiefly of carbonate of lime and yielding a little ore.—Los Quiñientos mine: Taylor's engine shaft: In the 185 south good progress is being made. The lode in the 165 east contains a little ore but not enough to value. The 150 east worth 3 tons per fathom; a large, promising, and productive lode. In the 130 east the lode is very regular, but it does not contain any ore.

MOUNT LYELL.—Report for week ending January 30: The west cross cut in the engine shaft at the 100 feet level has been driven 15 feet. A little water is making from the face. The north drive in the 50 feet has been extended 10 feet, and the ground secured. At this point the ore body is rising. The ore stoped has been of average value. Have sunk No. 2 shaft 3 feet, total 73 feet. The ground continues hard, and a little water is sinking in the bottom. Have driven the No. 5 tunnel 27 feet, total 187 feet. The country has been much tighter, and more difficult to break. The ore raised for the week is 10 tons, not yet assayed. Ore bagged, 313 bags—19 $\frac{1}{2}$ tons, containing 36,265 ounces of silver. Total raised from engine shaft to date, 121 tons 14 dwts. 2 qrs., containing 175,841 ounces silver, and 27 tons 13 dwts. 1 qr. 19 lbs. of copper. Making good progress with the new road.

MOSMAN GOLD.—Mine manager's report for fortnight ending February 1: North Australian Mine: Byerley level, north winze, deepened 16 feet, total depth 81 feet; the reef has increased in thickness to 12 inches, of very good quality, say, 2 $\frac{1}{2}$ ounces per ton. In Lucknow level rise the reef is 10 inches thick, of very good quality indeed, about 3 ounces per ton. With about 210 feet between the two levels, and at least 90 feet of solid ground between the bottom of winze and top of rise, the indications point to a fair block of ground to work. South Byerley level cross cut extended 9 feet, total from level 13 feet; the rock is very hard, and progress slow.—Stopes: The stopes look about as usual. In one place the reef is from 1 to 2 feet thick, carrying heavy mineral and showing gold. Stone raised during the fortnight 60 tons, total in the paddock 140 tons.—Wyndham Mine: No. 13 south level extended 21 feet, total from the shaft 27 feet. Reef 18 inches thick, worth, say, $\frac{1}{2}$ ounce per ton. No. 13 level north driven 26 feet, total 32 feet. The level is being continued on the course of the slide to meet the hanging wall, where I expect to meet with stone. No. 12 level north winze sunk an additional 23 feet, total depth 75 feet. No. 8 level north driven 24 feet, total distance 306 feet. No. 8 level south extended 20 feet, total from cross cut 37 feet. There is from a foot to 15 inches of very fair stone, worth (say) 25 dwts. per ton. Stopes over No. 12 level south the reef is 12 inches thick, worth (say) 15 dwts. Over No. 12 level north the reef is from 12 to 18 inches thick, worth (say) 18 dwts. per ton. On north side of winze reef is from 6 inches to 2 feet thick, worth about 12 dwts. per ton. Over No. 11 level north the reef is from 8 inches to 10 inches thick, worth about 15 dwts. per ton, having improved slightly. Over No. 9 level south the reef varies from 6 inches to 2 feet, worth (say) $\frac{1}{2}$ ounce per ton. Stone crushed 525 tons, after which a clean up on the 27th ult. resulted in a yield of 552 ounces 9 dwts. 12 grains gold.

MOUNT ZEEHAN (Tas.).—Manager writes for week ended 6th February: Argent Section, Main Engine Shaft: No. 6 lode 72 feet level north stope continued. Ore raised 28 tons 8 dwts. low quality seconds. Lode is from 1 foot to 3 feet 6 inches wide, which accounts for smallness of output. Our intermediate drive south is, however, opening up a lot of stopping ground of fairly good quality, which we shall proceed to take away. 132 feet level north on this lode has been extended 8 feet 9 inches, total 158 feet 6 inches. Lode is 4 feet wide, 2 feet of which is low grade ore. Ore raised 8 tons 9 dwts. seconds. Stope in back of this level south of No. 1 rise has been continued. Ore raised 85 tons 16 dwts. low grade seconds. Lode is 9 feet wide, divided by horse of mullock 3 feet wide.—No. 3 Lode: Drive south at 132 feet level on supposed No. 3 lode has been extended 6 feet 6 inches, total 23 feet 6 inches. No change. Shall start sinking on this lode from surface near our Balstrup boundary, where it shows good milling ore. Concentrator has been run during

57 hours, and has milled 145 tons 13 dwts. seconds for 17 tons cwt. concentrates, containing 13 tons 3 dwts. lead and 1235 ounces silver. Machinery is working splendidly, and consumption of fuel has been reduced.

DON PEDRO.—Mine report No. 3, February: No. 1 Stope: The mineral broken here is of better quality, but the water increases with every foot driven. We are now obliged to keep a pump working for nearly the whole of the time, and any further work in it from the 50 fathom horizon can only be done at increasing cost. When the 60 fathom crosscut has intersected the No. 8 shoot, and been driven far enough in it to permit the driving of a level, we shall be able to extract the remaining mineral comparatively quickly and cheaply. No. 2 stope is yielding mineral of the same quality as when last reported on, but the lode is a little harder, which makes it more easy to drive.—No. 4 Stope: This is now even with the breast of No. 5, and continues of good quality. 60 fathom crosscut: Until the 7th inst. this was being driven through the disturbed ground caused by the run which occurred in April of last year. We have passed through this and are now driving in soft sandstone which, though not difficult ground, requires close timbering. If the lode continues as the known points indicate the crosscut should penetrate the No. 8 shoot in 6 fathoms more. The lode through which it has passed is a small shoot under the No. 8 shoot. The mineral broken yielded 8 octaves per ton. The 50 fathom crosscut also cut this lode about 40 feet west of No. 8 shoot. There is no record of its quality at that point. We shall now be able to open on it between the two crosscuts, and, if it continues, to follow it above the higher horizon.

NAMAQUA COPPER.—Abstract of superintendent's report for January: Treenfontein Mine: 115 fathom level: All the necessary work to be done before the sinking of the shaft is again taken in hand is almost complete. During the month about 6 feet have been driven in the east side of the plot, in fairly good ore ground, worth 4 tons of ore per fathom. In the 105 fathom level west the driving appears to have entered a large mass of mineral, although some of the stuff has been a little more mixed with quartz and iron. The boundary of the ore is nowhere seen. Worth 7 tons of ore per fathom. The 105 fathom level east is being carried 7 feet high by 7 feet wide. There is still some ore found standing on the south side, worth 7 tons of ore per fathom. In the 105 fathom level, as the No. 24 winze has reached ground of no value, it is deemed better to further develop the 115 fathom level before doing any more work at this place. In the 95 fathom level west the lode is 3 feet wide, and has a rather more promising appearance, worth 2 tons of ore per fathom. In the 85 fathom level west the lode is well defined. There is a little copper ore mixed with the rock throughout, but as yet of no value.—Stopes: 105 fathom level west, on the south side: This stope is about 20 feet wide by 9 feet high, and is yielding well. Worth 9 tons of ore per fathom.—105 fathom level: Stopping is being carried on in the back of this level. This stope also yields well. Worth 9 tons of ore per fathom.—95 fathom level: Stopping is being done in the bottom of this level. It is yielding well. Worth 8 tons of ore per fathom.—New Shaft: 25 fathom level east: This driving has kept up its yield during the month. Worth 8 tons of ore per fathom.—25 fathom level west: In this direction there is a little improvement. Worth 8 tons of ore per fathom.—Phillips Shaft: In this shaft there is no change.—Output for February: 400 tons of ore of 23 per cent.—Shipping: The Glenrafin arrived at Port Nolloth to load on 10th March.

NEW HERIOT.—Head office, Pietermaritzburg, February 19: The following particulars are from the manager's report of February 15: 118 feet of driving, sinking, and cross-cutting done.—Mine: The work on the 3rd level has been very much hampered during the last fortnight owing to the heavy and incessant rains that have fallen. The whole of the pumps have had to be kept running constantly and we have had to draw water from the bottom of the shaft with the skips, causing delay in excavation for ore bin.—Battery: The 40 stamps ran 6 days and 15 minutes, crushing 1091 tons, yielding 512.77 ounces of smelted gold.—Cyanide works: Tons treated during the week, 502; average assay value, 6 dwts.; residues, 1.52 dwts.; theoretical extraction, 76.6 per cent.—No. 7 NORTH-EAST QUEEN.—The following fortnightly report has been received from the mine, dated Charters, 2nd February: During the fortnight Perry and party have broken about 10 tons of fair looking stone from under the No. 3 eastern level; at present there are from 6 to 12 inches of stone in the face. Gannon and party have about 5 tons of crushing stuff from the stulls. Cook and party gave up the stulls over No. 4 level; the same have been re-set to Pearce and party. Hall and party under No. 1 west level have from 6 to 8 inches of mineral stone in the face. Amount of quartz hauled during the fortnight 12 tons. During the fortnight the piston rod of the pump gave out. I had to replace the same with a stouter one, and have made several other repairs.—(Signed) H. Davis.

ORITA GOLD.—H. J. Prender, February 9: Run No. 74: On the 7th inst. we cleaned up from the top sluices \$1464. On the 8th inst. we cleaned up from the bottom sluice \$730. This, with \$247 bought gold, which is included in our cost account, makes \$2443, value of bar remitted by this mail. We have lost no time, as the water was turned on to another monitor the same day as we cleaned up. All is running smoothly.

PESTARENA.—Mid-monthly report: Signed W. Henwood Trelease, T. Henry Messa: Ends: The lode in the 55 east on No. 1 is now 1 metre wide, and mixed throughout with pyrites. Its production is estimated at 10 tons, of 1 ounce per fathom. The 70 end east is carrying a lode 1.30 metres in width, but is producing no ore to value. The 70 west on No. 1 lode is now in contact with the flat lode, which has greatly diminished its value. However, the No. 1 lode seems to keep its course, and it is hoped that when the flat lode has been passed that an improvement will again occur. Its value is now estimated at 3 tons of 1 ounce per fathom. The A and B lode in the 70 end west continues to improve, and is now estimated at 3 tons of 1 ounce 15 dwts. per fathom.—Crosscuts: The driving of the 130 crosscut has been resumed. Nothing of importance has been met with in either the 90 north, 90 south, or 70 crosscut north.—Stopes: The quantity of ore producing is on an average about the same as was reported on the 3rd inst., but the quality has somewhat improved.—Stabili Mine: The branch of ore reported in the Anza level on the 3rd inst. has become smaller, but the lode still continues to look promising. No ore has yet been met with in the 18 metre end north, and next month it has been decided to sink a winze on the ore shoot passed through in the level south. Transport of Timber: This has been somewhat interfered with during the present week by snowstorms, but will be completed in about four days.—Machinery: All the mills were re-started on the 14th inst., but there is not yet sufficient water to run them at full speed. All the machinery has been kept in its normal state of repair, and it is hoped that within a few days there will be sufficient water to keep the whole running at full speed.

SALISBURY GOLD.—The manager reports on the workings for the month of January as follows:—Total number of feet driven, sunk, and risen, 463 feet 3 inches, made up as under:—Main incline shaft advanced 8 feet, total 573 feet. South reef fifth level drive east advanced 54 feet, total 242 feet 6 inches. South reef fifth level winze No. 1 east advanced 18 feet, total 36 feet. South reef fifth level drive No. 1 west advanced 33 feet, total 249 feet. South reef fifth level winze No. 1 west advanced 22 feet, total 55 feet. South reef sixth level drive east advanced 24 feet, total 146 feet. South reef sixth level rise 1 east advanced 32 feet, total 32 feet. South reef sixth level drive west advanced 23 feet 9 inches, total 121 feet 9 inches. South reef sixth level rise 1 west advanced 31 feet, total 31 feet. South reef fourth level winze 1 west, advanced 9 feet, total 18 feet. Main reef leader fourth level winze 1 east advanced 12 feet 6 inches, total 81 feet 6 inches. Main reef leader fifth level drive east advanced 33 feet, total 175 feet. Main reef leader fifth level winze 1 east advanced 8 feet, total 8 feet. Main reef leader fifth level crosscut east advanced 3 feet, total 3 feet. Main reef leader fifth level drive west advanced 34 feet 6 inches, total 128 feet. Main reef leader fifth level crosscut north advanced 30 feet 6 inches, total 163 feet. Main reef leader sixth level drive east advanced 14 feet, total 39 feet 6 inches. Main reef leader sixth level drive west advanced 11 feet, total 26 feet. Main

reef leader sixth level crosscut north advanced 31 feet, total 31 feet. Main reef leader sixth level crosscut south advanced 31 feet, total 31 feet.—Milling: The mill ran 29 days 19 hours, ore milled 2100 tons. Gold extracted from the battery, 1239 ounces 10 dwts.; gold extracted from the cyanide works, 471 ounces 8 dwts.; total, 1710 ounces 18 dwts.; value £5705 1s. 9d. Total working expenses per ton, including redemption, £1 12s. 9d.; value of yield per ton, £2 2s. 9d.; expenditure on capital account, £1980 5s. 4d.; expenditure on revenue account, £5010 14s. 8d.; profit for the month, £694 7s. 1d.

CHAMPION REEF.—Fortnightly report of Captain James Rowe, superintendent, dated February 26: Dalyell's shaft: Owing to our having out a large stream of water in this shaft, we have been unable to do any sinking. The water is now decreasing a little. Winze below 620 feet level north sunk 6 feet, total depth 30 feet 9 inches. Lode 1½ foot wide, assaying 1 ounce 3 dwts. of gold per ton. New rise in back of level (65 feet north of winze) risen 30 feet, total height 30 feet. Lode 6 feet wide, assaying 1 ounce 10 dwts. of gold per ton. Winze below 620 south sunk 6 feet, total depth 47 feet 6 inches. The lode at this point pinched out, and being near the dyke is suspended.—Garland's shaft has been sunk in the dyke 12 feet, total depth 637 feet 6 inches. We shall now start a crosscut west at the 630 feet level to prove the thickness of the dyke and intersect the lode on its west side. 530 feet level north of west crosscut has been driven 33 feet 6 inches, total length 255 feet 8 inches; lode 5 feet wide, assaying 1 ounce 15 dwts. of gold per ton. 530 feet level south of crosscut driven 8 feet 3 inches, total length 60 feet. Having met with the dyke, this end is suspended. 440 feet level north of west crosscut driven 26 feet 3 inches, total length 265 feet 9 inches; lode 1 foot 6 inches wide, assaying 18 dwts. of gold per ton. No. 2 winze below level sunk 7 feet 9 inches, total depth 19 feet 6 inches; lode 3 feet wide, assaying 2 ounces 8 dwts. of gold per ton. 440 feet level south of west crosscut driven 30 feet 9 inches, total length 74 feet 6 inches; lode 4 feet wide, assaying 1 ounce 15 dwts. of gold per ton. 340 feet level north of west crosscut driven 28 feet 6 inches, total length 681 feet 10 inches. This end is now in the east and west dyke. We have about 7 feet further to drive to communicate with winze sinking below 240 south of Ribblesdale's shaft. No. 2 incline winze below level sunk 7 feet 3 inches, total depth 17 feet 6 inches. Lode 2 feet wide, assaying 2 ounces of gold per ton. We have resumed the driving of the 240 feet level north of west crosscut. This has been driven 12 feet, total length 345 feet. Lode 3½ feet wide, assaying 1 ounce 18 dwts. of gold per ton. No. 2 rise in back of level risen 7 feet, total height 51 feet. Lode 3 feet wide, assaying 2 ounces 8 dwts. of gold per ton.—Ribblesdale's Shaft: Owing to our altering the pitwork no sinking has been done in this shaft during the past fortnight. The 340 feet level south has been driven 24 feet 3 inches, total length 498 feet 5 inches. Lode 2 feet wide, assaying 1 ounce 8 dwts. of gold per ton. Winze below the 340 north on the fold sunk 17 feet 9 inches, total depth 63 feet 3 inches. Lode 3½ feet wide, assaying 1 ounce 14 dwts. of gold per ton. Winze below 240 south of shaft sunk 5 feet 6 inches, total depth 85 feet 6 inches. This is suspended until the 340 north of Garland's is communicated with the winze. No. 1 rise in back of 240 south risen 2 feet, total height 2 feet. Lode 4 feet wide, assaying 1 ounce of gold per ton. The 200 feet level north of No. 1 rise has been driven 17 feet, total length 17 feet. Lode 4 feet wide, assaying 18 dwts. of gold per ton. Rise in back of 200 north of No. 2 rise risen 7 feet, total height 100 feet. Lode 6 inches wide, assaying 12 dwts. of gold per ton. This is suspended. The 200 feet level south of No. 1 rise in back of 240 north has been driven 18 feet, total length 119 feet 6 inches. Lode 2 feet wide, assaying 1 ounce 6 dwts. of gold per ton.—Carmichael's shaft: The 315 feet level north has been driven 25 feet 9 inches, total length 485 feet 3 inches. End still in the east and west dyke. Rise in back of 315 south of crosscut west of shaft to communicate with vertical shaft has been put up 11 feet, total height 49 feet 6 inches.—Rowe's shaft: This has been sunk 11 feet, total depth below the 225 feet level 92 feet. Lode pinched to 1 foot wide, assaying 2 ounces 6 dwts. of gold per ton.—New well: This has been sunk 7 feet 6 inches, total depth 65 feet 6 inches. We have met with a little water.—New mill and compressor: The masonry work is being pushed ahead, and we hope to start erecting the machinery in a day or two.—Health: The health of the employees is fairly good.

MILL'S DAY DAWN UNITED.—Mine manager's report for fortnight ending January 29: No. 8 level west extended 5 feet, carrying fully 2 feet of reef in the face, of good quality. The shaft winze has been deepened 25 feet. No. 2 winze is sunk 11 feet. No. 7 level east has been driven a further distance of 19 feet. The formation has widened out to nearly the full size of the drive. In the stope the reef varies from 2 to 4 feet thick, of medium quality. The winze on the western side has been sunk 21 feet, at which point we holed to No. 8 level.—No. 6 level west: On the hanging wall section the reef is 2 feet 6 inches wide, of good quality. On the footwall section the reef varies from 1 to 6 feet thick, of fair quality. The level going east has been extended 8 feet, carrying 2 feet of reef. About 100 feet east of the footwall stope we have commenced to crosscut to intersect the stope as they advance; although a crosscut, it carries 2 feet of reef of fair quality.—No. 6 level east: The stope carries from 2 to 6 feet of reef of fair quality.—No. 5 level west stope: Reef varies from 2 to 6 feet fair quality. On the eastern level the reef in the stope ranges from 3 to 6 feet fair quality.—No. 4 level west: Extended 12 feet, carrying 3 feet of reef medium quality. In stope the reef varies from 3 to 8 feet medium quality. On the eastern side the reef ranges from 3 to 6 feet wide of fair quality. During the fortnight the water has been much heavier than usual, having baled 86 hours. Stone raised, 2050 tons.

POORMAN CONSOLIDATED.—Under date February 24, the manager reports as follows: I cabled you yesterday: "We have struck west vein Oso in crosscut. Very rich. We are now very near the mother vein. Milling delayed owing to hauling ore from mine; at present impossible on account of the deep snow. Shall commence crushing ore as soon as possible. Have begun to stope. Stopes looking splendid. The ore is very rich. The mine looks splendid throughout." There has been a storm of almost unparalleled severity raging now for some time almost without intermission, the snow having fallen to a depth of 6 feet on the level. The mill has been ready for work since the 18th inst., and, although it is only situated some 1500 feet distant from the mouth of the tunnel, the character of the weather we have experienced may be gathered when I inform you that communication by teams, for the purpose of hauling ore between these two points, has been a matter of impossibility; but this temporary delay will soon be terminated by the settling down and hardening of the snow, which is ceasing to fall. This delay has greatly inconvenienced us, as in all our stopes such large quantities of ore have been broken down in anticipation of hauling the same to the mill, that I have been obliged to suspend operations in this direction for a few days. The crosscut east from the Belle Peck has been extended a further distance of 27 feet, making a total of 120 feet from the junction of the North Empire ledge. As per my telegram of the 22nd inst. we have encountered the west vein of the Oso ledge in the Belle Peck crosscut. This vein is larger and very much richer in value than it is where opened in the Oso winze. In the crosscut it will average 6 inches in thickness, and is highly characteristic of the Oso ledge, showing the rich green copper stain with the deep blood colour, and thickly covered all over with gold, plainly discerned by the naked eye. In the upper workings there is a distance of 18 feet between this west vein and the main vein of Oso. If they continue to keep their relative distance, we should find the main vein very soon. The main drift of the Belle Peck level has been extended a further distance of 18 feet, making a total of 1567 feet. The ore encountered continues the same in size and value. In the north Empire stope, on the hanging wall, we have struck ore 8 inches wide, which assays \$500 in gold and \$30 in silver per ton. The four stopes recently put in on the Poorman main ledge show very high grade ore from 4 feet to 6 feet wide, standing between two permanent and well defined walls.

MISCELLANEOUS MEETING.

THE ROBURITE EXPLOSIVES COMPANY, LIMITED.

Full dividend on preference shares.—Increasing business.

THE fourth ordinary general meeting was held at Cannon-street Hotel, on Thursday, 15th March, under the presidency of Lieutenant General Sir JOHN STOKES, K.C.B.

The SECRETARY (Mr. H. A. Krohn) read the notice convening the meeting.

The CHAIRMAN said: The directors' report and the accounts for the year have been already for some time in your hands, and with your permission, therefore, we will take them as read. We may, I think, congratulate ourselves on the results of the year. Without entering into the right and wrongs of that great labour dispute, the coal strike, I will say that probably no event of a similar kind has dealt a heavier blow to British commerce. In our case, owing to our extensive trade with the Midland collieries, the effects were sharply and directly felt. With the outbreak of the strike all demands for roburite ceased in our best districts, and the bulk of our home trade was nearly dead for 16 weeks. In the Cape roburite has been almost entirely excluded from the great mining centres of the Transvaal by the action of the Boer Government, which not only prohibited the importation and sale of explosives by any persons except its own agents. The monopoly thus constituted was handed over to a French company for a royalty of 1d. per lb., and importation of other explosives by the mines for private use was permitted on payment of a duty amounting to something like 9d. per lb. In thus imposing differential duties to the disadvantage of British trade, the Transvaal Government violated the London Convention of 1884, and we immediately made the strongest representations to the Colonial Office, which has taken up the question, and is bringing pressure to bear on President Kruger. Taking the balance sheet, you will see that the expenditure on capital account has been small, the cost of patents and goodwill standing unaltered, and only a few trifling additions having been made to buildings, plant and machinery. We charge all we can to revenue, and I can vouch that our works are throughout in first-class condition. The slack time of the coal strike was utilised to renovate and repair wherever necessary, and you may take it from me that you possess an explosive factory second to none in the world for excellence of arrangement and completeness of equipment. Another point to be noticed is the item of £527 16s. 8d. for purchase of land, buildings, &c., in Australia. We took over this property from the Australian Company, and we have now at Sydney a centre for manufacture and storage which should be of great advantage to our Australasian trade. We made this purchase during a time of great depression in business, and our agent assures us that the property was a bargain, and would fetch more than we gave for it, even if cut up and sold for building sites. You will notice that the bankers' loan stands at a higher figure than last year. The difference is more than accounted for by the increase in stocks, mainly due to the necessity of keeping up our Australian supplies. In the trading account, agents' commission and discounts are £226 more than for 1892. This represents increased expenditure in pushing the business in certain outlying districts. For obvious reasons it is inadvisable to go into details, but I may go so far as to say that this expenditure is now producing results which, if maintained, should favourably affect this year's business. Turning to profit and loss account, I find that our salaries are £138 lower than in 1892, the principal members of our staff sharing with the shareholders and ourselves the effects of a bad year. The charge for advertising is also about £200 less, and altogether the saving on standing expenditure has been nearly £400. As regards the current year, our sales so far are better than those for the corresponding period of 1893. There is no falling off in the competition we have to meet, but we are holding our own well, and a far wider field of operations is likely to be opened to us shortly, if the report of the Royal Commission on Colliery Explosives recommends, as is expected, the prohibition of gunpowder in coal mines. You may be surprised to hear that so old-fashioned an explosive as gunpowder is our most formidable opponent, but so it is. In colliery and quarry work its simplicity and slow action make it a great favourite with miners, and the dangers attending its use are never for a moment considered. Moreover, familiarity is a great element of success, and this applies also to dynamite, which, as the oldest high explosive, is the best known and most firmly established. Nevertheless, as year after year brings out more clearly the dangers of gunpowder and dynamite, and the safety and power of roburite become more widely appreciated, by degrees we may hope that the prejudices against its novelty will entirely wear away. Altogether, the outlook at present is favourable, and I hope when we meet again next year to be able to congratulate you on a good year's business and a respectable dividend. I think you will admit that no one could foresee the severity or the length of the coal strike, which has been our great misfortune in the past year. I conclude by moving the following resolution:—"That the report of the directors and accounts for the year ending December 31, 1893, be received and adopted."

This resolution was carried unanimously, as was also the motion declaring a dividend for the half-year ending December 31, 1893, at the rate of five per cent. per annum on the preference shares of the company, making, with the interim dividend paid in September last, the full dividend of five per cent. for the year.

Messrs. S. Lowe, H. W. Maynard, and Colonel Gerard Smith were unanimously re-elected directors, and Messrs. Price, Waterhouse and Co., auditors.

A hearty vote of thanks to the Chairman and directors concluded the proceedings.

THE GREATEST BULLION OUTPUT.—The largest bullion shipment ever made from the Comstock in one lot was on the night of December 31, 1877. It included 133 bars from the Consolidated Virginia Mine and 129 bars from the California. The aggregate weight of the bars was 32,518 pounds, valued at \$1,099,099.71, says the *Territorial Enterprise*. The total combined yield of Consolidated Virginia and California Mines in the year 1877 was \$32,658,869. The total bullion yield of the State in that year was \$51,580,290, according to the annual statement published by Wells, Fargo and Co. The total combined yield of the Consolidated Virginia and California Mines from the discovery of the vast ore body on the 1400 level up to July, 1878, was \$100,011,285. At the close of the year 1878 these two mines had paid out in dividends up to that date a total of \$76,731,000. Since the consolidation in January, 1886, of the two mines, under the title of the Consolidated California and Virginia, the total sum paid in dividends from the ore discovery in the north end of the mine in that year was about \$2,500,000, and the total amount paid in dividends from ore extracted from the ground now consolidated under that title was more than \$30,000,000. The total yield of that ground to date is not less than \$120,000,000.

THE MINERS' EIGHT HOURS BILL.—On Saturday evening the Earl of Rosebery, addressing a meeting in the Corn Exchange, Edinburgh, said:—"There is one Bill which, though not mentioned in the Queen's Speech, and though not a Government Bill, is a Bill which affects Midlothian in a very remarkable degree, and which the Government are determined, not as a Government, but with the great mass if not the unanimity of the Government support, to give every facility to. I mean the Miners' Eight Hours Bill. The Government will give that a day; they will give it every facility consistent with the work of the Session, and they will, though they cannot at present—we have not had time to think of that—adopt it as a Government measure. They will spare no efforts as individual ministers to secure its passing into law."

THE EDITOR'S LETTER BOX.

We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.

THE TRANSVAAL LANDS COMPANY, LIMITED.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—While the shares (15s. paid up) are quoted at 3s., those fully paid are only 6s. Can you, Sir, or any of your readers, explain this strange anomaly? Besides investments, cash in hand, an improving undertaking (likely soon to prove very remunerative), and an enormous property (daily increasing in value), this company has an uncalled capital of £42,500.

No call is likely to be made for some time. I consider the fully paid shares cheap at £1, and expect they will soon reach and exceed that sum.

There has been some significant buying lately. Are the dealers keeping the quotation down to suit their own purpose? The shares are certainly now worth more than when bought at 50s. each.—I am, &c.,

TRANSVAAL.

THE MASHONALAND DEVELOPMENT COMPANY, (WILLOUGHBY'S) LIMITED.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—This company, with a small capital and ample funds, possesses an immense amount of land and gold claims in Mashonaland, and Sir John Willoughby, as managing director, has recently secured some important interests in Matabeleland on very advantageous terms.

It is rumoured that several subsidiary companies are to be floated. These shares were largely over applied for on the company's flotation last year. I know of at least one instance where four times as many were applied for as the applicant received. They are now obtainable at about £1 each, and are spoken of as likely to have an early big advance. One great authority describes them as being now worth £2 each.

In the Mashonaland and Matabeleland "boom," which will take place this year, it would be difficult to say how high these shares will go. Your readers would do well to buy at the present low price, either to hold as a permanent investment, or to sell on a rise of some pounds.

Last year "Willoughby's Syndicate" shares were selling at about £12 each. I see no reason why these shares should not go even higher. Sir John Willoughby is reported as having declared that they will touch £5 before his return to England. His arrival is likely to cause a further rise.—I am, &c.,

MASHONALAND.

SUTHERLAND REEF, LIMITED.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—After the emphatic warning by the financial Press no one with a grain of sense should venture to touch these shares. A London paper recently significantly remarked, "It is hardly likely that our readers will be inveigled into taking a hand in the rigging of these worthless shares." Would holders have sold their shares in thousands at something like 1s. 6d. each if they had any confidence in the concern? However practical and efficient, a manager cannot make a worthless property, such as this, pay its expenses. Dividends never will be paid. Calls will be made in rapid succession until the liability is paid up. Then another reconstruction will be proposed.

Gold is spread over a large area in South Africa that will never pay to work. The existence or non-existence of gold in payable quantities just makes the difference between a property being worth working or utterly valueless. To the latter category time will prove the Sutherland Reef belongs. A few tons of ore suffice to start a battery, but a very large amount is necessary to continuously supply it, and the ore must, moreover, give a certain steady yield of gold even to cover the cost of crushing, &c. To try and start a battery, and then shut it down and leave it to rot, is waste of money.

After receiving the new manager's report, and as recently as January 23rd, even the directors were doubtful as to the desirability of incurring the cost of a battery. What has this company done to justify its more than five years' existence? South African capitalists are only too ready to secure an interest in any promising concern, and when they decline to purchase shares in a company English investors will save themselves from grievous disappointments and heavy losses by doing the same. During the last eight years shareholders in the Mysore Company have received £3 15s. in dividends on every £1 share. These shares are a better purchase even at £10 each than Sutherland Reefs at 10 farthings a bushel.

Even much-abused Silati shares would be cheaper at £1 each than Sutherland Reefs at 1d. The La Plata Mines (Limited) own a magnificent property in Mozambique, and has prospects second to none in South Africa. The shares are of a nominal value of 5s. (4s. 3d. paid up), and I doubt whether the final 6d. will ever be required to be called up. These shares can be bought at about 1s. each, and are likely to go to a very high premium.

Holders of Sutherland Reefs should sell at once and re-invest the proceeds in these shares. Your readers generally cannot buy a cheaper or more promising South African share, and should secure some before they have risen. To show what is thought of Sutherland Reef shares—how difficult the dealers find it to obtain buyers even in small lots; how eager they are to get rid of any shares they have; and how utterly fictitious the quoted price is—I give the following instance:—

A dealer who recently bought some got rid of them during the same account at a loss of many pounds, some being sold at over 30 per cent. less than the purchase price, although during the same account the shares were quoted in a certain paper at nearly 25 per cent. above the price he gave.

Most of the transfers were in small lots of 5, 10, 20, 25, 40, 45, and 50 shares.—I am, &c.,

VIGILANT.

P.S.—I hear there is good buying of La Plata shares going on, and a 1s. rise is imminent; even if purchasers sell when they reach 5s. they will secure a profit of 400 per cent.

[Readers will, of course, take note that we do not necessarily endorse the opinions of our correspondents in the above.—Ed. M. J.]

MR. WM. SCHROLLER, Engineer and Contractor, Darham, formerly Chief Engineer and Manager of the late firm of Simon and Lübrig, Coal Washer Specialists, and for many years Chief Contractor of Mr. Henry Simon, M.I.C.E., Manchester, for his well-known Simon Carré Coke Ovens with recovery of Bye-Products, has COMMENCED PRIVATE PRACTICE as a CONSULTING ENGINEER, and will advise upon and carry out schemes in the above two specialities, with offices at 18, Old Elvet, Darham.

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

MR. SAMUEL JOHN DAVEY, Dealer in Cornish Mine Shares, Redruth, Cornwall, reports under date of March 21 (4 o'clock), as follows:—Our market has been firm this week, but not active. Dolcoath, Tincroft, and South Frances advanced, with sellers scarce. Killifreth declared a 3s. dividend yesterday, and its report was good. To-day market is very quiet, but prices are firm. Following are quotations:—Blue Hills, $\frac{1}{2}$ to $\frac{1}{2}$; Carn Brea, $\frac{1}{2}$ to $\frac{1}{2}$; Cook's Kitchen, $\frac{1}{2}$ to $\frac{1}{2}$; Dolcoath, $\frac{1}{2}$ to $\frac{1}{2}$; East Pool, $\frac{1}{2}$ to $\frac{1}{2}$; Killifreth, $\frac{1}{2}$ to $\frac{1}{2}$; Levant, $\frac{1}{2}$ to $\frac{1}{2}$; Phoenix United Mines, $\frac{1}{2}$ to $\frac{1}{2}$; Polberro, $\frac{1}{2}$ to $\frac{1}{2}$; South Crofty, $\frac{1}{2}$ to $\frac{1}{2}$; South Frances, $\frac{1}{2}$ to $\frac{1}{2}$; Tincroft, $\frac{1}{2}$ to $\frac{1}{2}$; West Frances, $\frac{1}{2}$ to $\frac{1}{2}$; West Kitty, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Agar, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Basset, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Grenville, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Kitty (St. Agnes), $\frac{1}{2}$ to $\frac{1}{2}$; Polberro, $\frac{1}{2}$ to $\frac{1}{2}$.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Lakeard, Cornwall, writes (March 22) as follows:—The mining market has presented a steady appearance throughout the week, although tin has been fluctuating, shares fully maintain their prices, and are firmly held in view of an advance. The following are prices:—Blue Hills, 1s. to 1s. 6d.; Carn Brea, $\frac{1}{2}$ to $\frac{1}{2}$; Cook's Kitchen, $\frac{1}{2}$ to $\frac{1}{2}$; Dolcoath, $\frac{1}{2}$ to $\frac{1}{2}$; Devon Consols, 1 to $\frac{1}{2}$; East Pool, $\frac{1}{2}$ to $\frac{1}{2}$; Killifreth, $\frac{1}{2}$ to $\frac{1}{2}$; Levant, $\frac{1}{2}$ to $\frac{1}{2}$; Phoenix United Mines, $\frac{1}{2}$ to $\frac{1}{2}$; Polberro, $\frac{1}{2}$ to $\frac{1}{2}$; South Crofty, $\frac{1}{2}$ to $\frac{1}{2}$; South Frances, $\frac{1}{2}$ to $\frac{1}{2}$; Tincroft, $\frac{1}{2}$ to $\frac{1}{2}$; West Frances, $\frac{1}{2}$ to $\frac{1}{2}$; West Kitty, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Agar, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Basset, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Grenville, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Kitty, $\frac{1}{2}$ to $\frac{1}{2}$; Tin, 6s.

Messrs. ABBOTT AND WICKETT, Stock and Share Brokers, and Mining Share Dealers, Redruth, write under date of Thursday, March 21:—A better market this week all round, and some shares show a sharp rally from recent rates. Bayers: Dolcoath, $\frac{1}{2}$; South Frances, 17s. 6d.; West Kitty, $\frac{1}{2}$; Tincroft, $\frac{1}{2}$. Quotations herewith (four o'clock):—Carn Brea, $\frac{1}{2}$ to $\frac{1}{2}$; Cook's Kitchen, $\frac{1}{2}$ to $\frac{1}{2}$; Dolcoath, $\frac{1}{2}$ to $\frac{1}{2}$; East Pool, $\frac{1}{2}$ to $\frac{1}{2}$; Killifreth, x.d.; $\frac{1}{2}$ to $\frac{1}{2}$; Phoenix, $\frac{1}{2}$ to $\frac{1}{2}$; Polberro, $\frac{1}{2}$ to $\frac{1}{2}$; South Crofty, $\frac{1}{2}$ to $\frac{1}{2}$; South Frances, $\frac{1}{2}$ to $\frac{1}{2}$; Tincroft, $\frac{1}{2}$ to $\frac{1}{2}$; West Frances, $\frac{1}{2}$ to $\frac{1}{2}$; West Kitty, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Agar, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Basset, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Grenville, $\frac{1}{2}$ to $\frac{1}{2}$; Wheal Kitty, $\frac{1}{2}$ to $\frac{1}{2}$; Tin, 6s.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write, March 21, 1894 (noon):—But little business is reported for the past week, the approach of Easter holidays, which are followed immediately by the settlement, inducing indisposition to enter into fresh business. Without going into further detail, we shall simply record the actual changes for the week in the foremost markets. Consols $\frac{1}{2}$ lower. Colonial stocks: New South Wales Inscribed $\frac{1}{2}$, and Victoria Inscribed $\frac{1}{2}$ lower. Corporation stocks: Bolton Three and a-half per Cent. $\frac{1}{2}$, and Manchester Three per Cent. $\frac{1}{2}$ lower. Foreigners: Higher: Argentine Five per Cent., $\frac{1}{2}$; ditto, Six per Cent., $\frac{1}{2}$; Italian Rentes, $\frac{1}{2}$; Spanish Four per Cent., $\frac{1}{2}$; and Turkish, 1871, $\frac{1}{2}$ lower. Mexican Six per Cent., 1; Brazilian Four per Cent., $\frac{1}{2}$; Egypt United, $\frac{1}{2}$; and Portuguese Three per Cent., $\frac{1}{2}$. In miscellaneous, there are very few transactions here beyond the business in Ship Canal shares, which, amidst some (for them) fairly wide fluctuations, have changed hands repeatedly. In other than locals, Allsopp's are again a feature, the oscillations having been sharp and wide, but on balance for the week there is no absolute alteration in prices. The transactions are so few and changes on the whole so unimportant that a simple record of the changes is all that is called for in the several sections. Ship Canal shares were forced down sharply last Friday on a rumour that Sir John J. Harwood, one of the Manchester Corporation directors, had resigned his seat on the board. This was speedily contradicted, and the Ordinary and Preference issues have since recovered to very near last week's prices, the depreciation remaining only amounting to about 1-16 or $\frac{1}{2}$ on either issue.

BANKS.—Higher: Lancashire and Yorkshire, $\frac{1}{2}$; District, $\frac{1}{2}$; Oldham Joint Stock, $\frac{1}{2}$; Parr's $\frac{1}{2}$. Lower: London and Midland, $\frac{1}{2}$. **INSURANCE**.—Higher: Commercial Union, $\frac{1}{2}$; Liverpool, London, and Globe, $\frac{1}{2}$; Manchester Fire, 1-16; Maritime, $\frac{1}{2}$. **TELEGRAPHS**.—Higher: West and Brazilian, $\frac{1}{2}$; ditto, Preference, $\frac{1}{2}$. Lower: Anglo-American, $\frac{1}{2}$ to $\frac{1}{2}$; ditto, Preference, $\frac{1}{2}$. **MINES**.—Higher: Tintos, $\frac{1}{2}$; Lower: Burma Ruby, 1-16. **BREWERIES**.—Higher: Clarkson's $\frac{1}{2}$; Farnham, $\frac{1}{2}$; Parker's, $\frac{1}{2}$; Threlfall's, $\frac{1}{2}$.

MISCELLANEOUS.—Higher: Bryant and May, $\frac{1}{2}$; Coats, $\frac{1}{2}$; Patent Nut, $\frac{1}{2}$; Primitiva Nitrate, $\frac{1}{2}$; Salt Union, $\frac{1}{2}$; Seddons, 1s. 6d.; Tredegar "A," 1. Lower: Brooke Bond, $\frac{1}{2}$; Brunner Mond, $\frac{1}{2}$ to 1; Eastman's, $\frac{1}{2}$; Fowler's, 1-16; Palaces, $\frac{1}{2}$; Whitworth's, $\frac{1}{2}$; Northern Assets, 1s. 6d.; Ship Canal Ordinary, 1-16; ditto, Preference 1-16 to $\frac{1}{2}$.

LATER (4 P.M.).—Markets very idle; but still, notwithstanding, prices keep very firm. Indeed, where changed prices show improvement to-day so far as home rails and Americans are concerned, whilst Canadians and Mexicans are without any change of moment.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (March 21), writes:—Since last report markets have been quiet, but prices are firm. Trade reports are encouraging, and the money market easy, but the approach of the Easter holidays is restricting transactions.

In shares of coal, iron, and steel companies prices are steady. The principal business has been in Steel Company of Scotland shares, which fell to 62s. 6d., but recovered to 73s.; Bolckow, Vaughan are at 12 $\frac{1}{2}$; Ebbw Vale, 8 7-8ths; Marbella, 60s. 3d.; Niddrie, 50s. 6d.; Rhymney, 30s.; Stewart and Clydesdale, 8 11-16ths; and Wilson's and Clyde, 9 $\frac{1}{2}$.

In shares of copper concerns prices are a little better in sympathy with the market for the metal. The announcement that the stocks of copper were being reduced owing to the smaller American shipments is satisfactory. Tharals have touched 100s. 6d., and Tinto 15 5-16ths. Arizona are at 7s. 3d.

In shares of gold and silver mines there has been more business doing. Montana have improved to 6s. 4 $\frac{1}{2}$ d. African Gold Recovery shares improved to 20s. on the prospect of negotiations for settlement of the patent dispute coming to a satisfactory issue. Broken Hill Proprietary announce a dividend of 1s., payable on April 11, although some had expected a smaller distribution this time. Champion Reef Company will pay an interim dividend of 2s. on April 12. The Frontino and Bolivia returns for January show an estimated profit of £1326. Mallina (West Australia) shares offered. Blue Spar wanted. Burma Ruby are at 5s.; Consolidated Gold Fields of South Africa, 45s.; Cassel, 18s. 6d.; Cinto, 1s. 6d.; El Callac, 27s. 6d.; Emma, 4 $\frac{1}{2}$ d.; Gold Fields of Mysore, 25s.; Kimberley Rodeopeter, 8s.; Lisbon Berlyn, 3s.; Orita, 2s. 6d.; St. John del Rey, 19s. 6d. to 20s. 6d.; and Silati River, 4s. 3d.

In shares of miscellaneous companies there is not much alteration to notice. Oil companies shares are firm, but there are few transactions to note. Pumpherson are at 6 $\frac{1}{2}$, and Young's 26s. It appears sulphate of ammonia continues scarce, and the price has risen to 14 $\frac{1}{2}$. Lawes' Chemical are at 6 $\frac{1}{2}$; Noble's Explosives, 13 9-16; Roburite Explosives 32s. 6d., and White Lead, 5s. to 6s.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of March 21:—A moderate amount of business, well distributed over the various

departments, has been going on, and the tone is good. In railways, Caledonian Deferred and North British have received most attention. The former has improved from 42 11-16 to 43 5-16, and the latter from 41 to 42 1-16. British Linen has risen from 375 to 378; Commercial from 67 $\frac{1}{2}$ to 67 $\frac{1}{2}$; Union from 21 9-16 to 21 $\frac{1}{2}$. In insurance shares, Alliance have advanced from 9 $\frac{1}{2}$ to 10, Commercial Union from 80 $\frac{1}{2}$ to 80 $\frac{1}{2}$. North British and Mercantile from 36 $\frac{1}{2}$ to 37 $\frac{1}{2}$. American Mortgage of Scotland shares have fallen from 7s. 6d. to 2s. 6d. Edinburgh American Land have improved from 14s. to 15s., Scottish American Investment from 76s. to 77s., Scottish American Mortgage from 57s. 6d. to 58s. Coal and iron shares generally maintain previous prices. Oils idle. Edinburgh Street Tramways 1s. 8d. lower at 5 $\frac{1}{2}$. Assets shares 6d. up at 48s. 6d. Coats 5s. lower at 16 $\frac{1}{2}$. Distillers 2s. 6d. lower at 16 $\frac{1}{2}$. McEwan Preference 1s. 3d. higher at 12 $\frac{1}{2}$. The shares of the Edinburgh District Tramway Company are at a premium of about 2s. 8d.

JOINT-STOCK COMPANIES.

NEW REGISTRATIONS.

THE following are among the joint-stock companies registered at Somerset House since our last notice:—

Monte Rosa Gold Mining Company (Limited).—Registered 5th March by Joseph Davis, 21, Liverpool Street, E.C. Capital £240,000, in 25 shares. Objects: To acquire a concession of the gold mine called La Pesce, situated in the territory of d'Alagna, Sella, Italy, conceded by royal decree dated 5th February, 1893; the amplification of such concession obtained by royal decree dated 17th January, 1892; the concession of the Gold Mine of Kres, called Dell Oro, in the territory of d'Alagna Sella; the permission to prospect Ploce, Decco, Bors, Alpe Mude Jassa, Paller, Blue et Ecu, in the said territory, and Alpe Sales Felicio and Pyramide de Vincent, in the territory of Gressoney la Trinité; to enter into an agreement with the Incorporated Trust (Limited), and to carry on the business of a general mining company.

Pigg's Peak Development Company (Limited).—Registered by Fell and Armstrong, 46, Queen Victoria Street, E.C., with a capital of £400,000 in 40 shares. Objects: To enter into and carry into effect an agreement, made February 27, 1894, between the Pigg's Peak Estate and Gold Mining Company (Limited) of the one part and E. M. Rands, on behalf of this company, of the other part, for the acquisition of all the mining rights, concessions, &c., of the Pigg's Peak Estate and Gold Mining Company (Limited); to acquire other grants, concessions, leases, claims, licenses, &c., of or over mines, mining rights, lands, mineral properties, water and other rights in South Africa and elsewhere, and to carry on mining operations of every description. There shall not be less than three nor more than seven directors. The first are G. T. Rait, S. Boulton, P. Whitehead, E. M. Whitehead, and A. Fall. Qualification, £500. Remuneration to be fixed by the company in general meeting.

National Tin Plate Company (Limited).—Registered by E. Cox and Sons, 102, Chancery Lane, W.C., with a capital of £25,000 in 25 shares. Object, to manufacture and deal in iron, steel, tinned, and black plate and galvanised sheets. There shall not be less than three nor more than seven directors; the first to be elected by the signatories to the Memorandum of Association. Qualification, £300. Remuneration to be fixed by the company in general meeting.

Santa Francisca Gold Mines (Limited).—Registered by Hugh O. Godfrey, 60, Finsbury Pavement, E.C., with a capital of £300,000 in 30 shares. Object, to acquire gold or other mines and mining rights and metalliferous land in the Republic of Nicaragua, or elsewhere in Central America, and to carry on the business of miners and smelters in all its branches. The first directors—to be not less than three nor more than seven—are to be appointed by the signatories to the Memorandum of Association. Qualification, £500. Remuneration to be fixed by the company in general meeting.

J. P. Langgaard and Co. (Limited).—Registered by C. E. Newnham, 39, Coleman Street, E.C., with a capital of £60,000 in 60 shares. Object, to carry into effect an agreement, made February 2, 1894, between J. H. Langgaard of the one part and this company of the other part, for the acquisition of the Hakkehoeste Estate, and to carry on, in Denmark and elsewhere, the business of brick and tile manufacturers, potters, colliery proprietors, &c. The first directors—to be not less than three nor more than seven—are O. S. Andersen, C. H. Andersen, Dr. P. de P. Langgaard, R. B. Harper, and J. H. Langgaard (managing director). Qualification, £100. Remuneration not stated.

Duffryn Rhondda Fire-Brick Company (Limited).—Registered by Windybank and Co., 35, Bucklersbury, E.C., with a capital of £2500 in 25 shares. Object to acquire and carry on the business of fire brick manufacturers as hitherto carried on at Oymmer, near Bridgend, Glamorganshire. Registered without Articles of Association.

General Mineral Patents Syndicate (Limited).—Registered by Stretton, Hillard, and Co., 75, Cornhill, E.C., with 20 members, each of whom is liable for £1 in the event of winding up. Object, to acquire, develop, and work certain patents, particulars of which are not given.

Santa Francisca Gold Mines (Limited).—Registered 6th March by Hugh O. Godfrey, 60, Finsbury Pavement, E.C. Capital £300,000, in 30 shares. Objects: To purchase, or otherwise acquire, any gold or other mines in the Republic of Nicaragua, or elsewhere in Central America, to explore and turn to account the same; to carry on the business of miners, smelters, quarries, &c. There shall not be less than three nor more than seven directors. The first are to be appointed by the signatories to the Memorandum of Association. Qualification £500. Remuneration as fixed by the company in general meeting.

Tyler and Ellis Hydraulic Forging Company (Limited).—Registered by R. E. Veslan, 5, Crown Court, Chancery, E.C., with a capital of £10,000 in 10 shares. Object, to acquire the plant for forging the Price-Williams continuous rail crossings, and to carry on business as mechanical engineers and metal founders. Table A main applies.

Nelly Colliery Brick and Tile Company (Limited).—Registered by Birchall, 85, Gracechurch Street, E.C., with a capital of £25,000 in 25 shares. Object, to enter into an agreement with the Equitable Finance and Contract Association of London (Limited), and to carry on the business of brick and tile makers, colliery proprietors, coke manufacturers, &c. Registered without Articles of Association.

WANTED.

* Prepaid Advertisements are inserted in this column at the rate of 8d. per line with a minimum charge of 4s.

ANALYTICAL CHEMIST and ASSAYER, of seven years' varied experience, now engaged in an important Metallurgical Laboratory, DESIRES ENGAGEMENT. No objection to going abroad. Apply, "Metallurgy," Bank Villas, Graig, Swansea.

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MINING ENGINEER and METALLURGIST now in California, six years' experience as Mine Superintendent and Metallurgical Engineer in British Colony and California, OPEN for ENGAGEMENT to any part of the world. Speciality, treatment of refractory gold ores; has erected mill for amalgamation, concentration, and chlorination, and two cyanide extraction works. 35 years' old. Best references; knowledge of languages. Address, "L. O. 22," MINING JOURNAL, 18, Finch Lane, E.C.

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CONTAINING SOME 18 MILLION TONS. WANTED, a GENTLEMAN to join with £1000 or £1500, no risk; certain £10,000 profit. Opportunity seldom offered. Apply, "IRON," MINING JOURNAL Office, 18, Finch Lane, London, E.C.

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Steamers.	Antwerp.	Rotterdam.	Hamburg.	Southampton.
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17 Gaul (Twin Screw)	—	—	—	April 7
18 Athenian	—	—	—	April 14
19 Pretoria	—	April 8	April 14	April 21

† Calling at Madeira. J. Via Lisbon and Tenerife. ‡ To East Africa.

The twin screw s.s. Scot will sail from Southampton on 25th May.

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The Union Line Express is despatched from Waterloo Station (Main Line Platform) every Saturday.

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COMPANIES AND LEGAL ANNOUNCEMENTS.

* Advertisements are inserted in this column at the rate of 9d. per line with a minimum charge of 7s. 6d.

THE CHAMPION REEF GOLD MINING COMPANY OF INDIA (LIMITED).

AT A MEETING of the Directors of the Company, held to day, it was resolved—

"That an Interim Dividend (free of Income Tax) of 2s. per share be and is hereby declared, payable on the 12th day of April, 1894, to the Shareholders on the books of the Company on the 30th March, 1894, and that the Transfer Books be closed during the said 30th March."

JOHN GARLAND, Secretary.

6 and 7, Queen Street Place, London, E.C.,

March 19th, 1894.

COLOMBIA GOLD MINING COMPANY.

A DIVIDEND of 16 francs (or 12s. 9d. in sterling) per share has been declared against Coupon No. 2, which should be presented between the hours of 10 and 2 (Saturdays 10 and 1) at the office of Baring Brothers and Co. (Limited), 8, Bishopsgate Street Within, where the usual lists may be obtained.

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The Hague, March 20th, 1894.

MINING IN MEXICO.

NATIVE METHODS OF WORKING.

By J. HOWARD PALMER, B.A.

MINING has been carried on in Mexico since the conquest of the country by Cortez, in the 16th century, and so robust and persistent are the veins in the Guanajuato, Zacatecas, and Pachuca districts that the same mines have been worked uninterruptedly and at a profit for the last 300 years, and are still producing to-day. In countries like Australia or the United States, mining is a thing of yesterday, and every mine owner has to find out for himself how he can most cheaply mine and reduce his ore without having any experience of the past to guide him. The Mexicans, however, have been miners from father to son for centuries, and in the older fields at least their practice both underground and on the surface is very economical and peculiarly suited to the conditions of the work.

All the principal mines are situated at altitudes varying from 6000 to 8000 feet above sea level, and, as may be imagined, at such altitudes fuel, water, and timber are very scarce. There is hardly any coal in Mexico, except in the extreme north, and it is generally cheaper to burn wood in boilers. On the other hand, forage is cheap, as it only costs about \$1.50 per week to keep a mule, and the Mexicans accordingly get out of the fuel difficulty by using mule and horse power instead of steam, wherever they can. Instead of modern hoisting machinery, horse whims, or malacates, constructed entirely of wood, are still largely used, and in the reduction works the Chilian mills and arrastras are turned by mules instead of steam power, and the same animals, when they are too worn-out for anything else, serve to trample and stir up the argilliferous mud of the tortas. The ancient method of unwatering the mines is also very curious. All workings below the water level were so planned that they drained into a central sump or reservoir. Above this sump is fixed a barrel, over which runs an endless string of buckets dipping into the water below, and discharging into another reservoir 30 feet or so above the lower one. Suitable gearing actuates the revolutions of the barrel, and the whole concern is turned by a mule. Thus by a succession of these reservoirs and trains of buckets the water is finally lifted to the surface. These clumsy and expensive arrangements have, however, nearly gone out of use in the mines, though still employed for wells and irrigation. Great bags of ox hides sewn together and slung to the cable are now the usual means of unwatering vertical shafts where there are no guides, and tonneles, or cylindrical drums of wood and galvanised iron have also been found very efficient. These tonneles are generally about 3 feet in diameter and 10 feet long, and are fitted with a valve lifting inwards, so that they can be discharged automatically when they reach the top of the shaft. Steam and Cornish pumps are gradually coming into favour, and none too soon, for most of the old Mexican mines have now to cope with such quantities of water that powerful pumping machinery is an absolute necessity for further development. There are plenty of mines in Mexico where all that is wanted for profitable working is an economical method of dealing with the water, but it generally happens that the native owners are frightened at the expense of machinery, let the water rise, and lose the mine. The worst of it is, that the Mexican engine-drivers and firemen, from ignorance or carelessness, will not look after their machinery, so that breakdowns of hoisting gear or disastrous boiler explosions are far too common, and these accidents keep up the prejudice against machinery in the conservative minds of the Mexican mineowners.

The way in which the Mexicans often treat machinery is simply disgraceful, and it is not too much to say that many of their failures in deep mining are entirely due to neglect of hoisting or pumping plant. Inspection by Government authority has never been dreamt of, and the consequence is that boilers are allowed to choke up with scale, and leaky joints and burnt and pitted plates go from bad to worse until the inevitable disaster occurs. Then, of course, the unfortunate fireman is to blame, although with proper care and inspection the accident need never have happened. Another serious drawback to the employment of machinery in Mexico is the scarcity of skilled mechanics. If an engine or boiler goes wrong, the Mexicans are generally helpless to do the necessary repairs, and have to send to the nearest English mining company or railway for assistance. The fact is that the Mexican engineers are excellent miners in their way, but poor mechanics, and it is not to be wondered at that many mines are suffering from the reluctance of their proprietors to incur the risk and expense of the machinery necessary to set them going again.

It is in underground work, however, that the Mexicans exhibit their best, and though some of their methods are perhaps not so scientific as they might be, they are eminently economical and adapted to the conditions of the mines. Adits are preferred to shafts, at any rate, until the value of a lode is proved, for the Mexicans emphatically do not believe in sinking a vertical shaft through the country rock to cut a vein at so many metres down, however promising the outcrop may be, nor are they fond of driving an adit across the strike of a lode. The usual way of opening up a new vein is by driving an adit along the vein from the outcrop, of course as low down in the hill side as possible; when an ore body is found a shaft is sunk either from the level of the adit or from the surface, as the case may demand. Where hoisting is either slow or costly, shaft sinking costs from \$100 to \$200 per metre, against \$20 to \$40 per metre for drifting, and the Mexicans will not find the money for the former. When they do sink shafts, they are generally in payable ore all the time. If the configuration of the ground is unfavourable for an adit, they sink an inclined shaft upon the outcrop, always following the vein, with the result that the shaft gets as crooked as a dog's hind leg, if the dip is at all variable. They are by no means fond of working through country rock, but they will follow a vein for ever, however barren and weak it may be, with wonderful patience. In Guanajuato especially, the lodes are very "pockety," and a small and disintegrated vein often suddenly widens out into a great ore body. In this district one tunnel was persevered with for 11 years, the vein being nearly barren during all this period. At last, however, when nearly a mile and a half had been driven, a bonanza was reached producing more than a million sterling. In this case, at any rate, the policy of persistently following up the lode paid well. Some of these old Mexican adits are curious affairs. One that the writer remembers had evidently been begun 300 years ago, when the Spaniards first came into the country, when powder was too expensive to use for blasting. Just at the mouth there were still to be seen the traces of fires which had been lighted to crack the rock in lieu of blasting it, and inside were the relics of a tramway with wooden rails, which was probably older than Trevethick or Watt. With nothing more besides these primitive appliances this mine in the last century produced \$30,000 to \$40,000 a week, nine-tenths of which would probably be clear profit.

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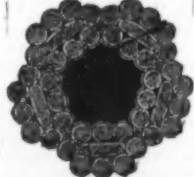
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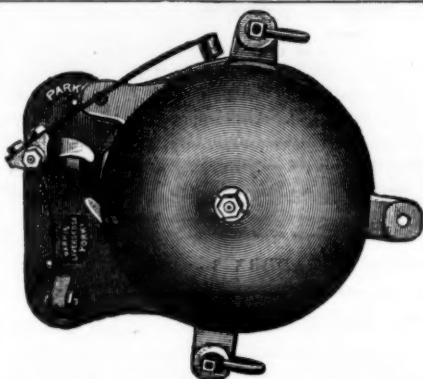
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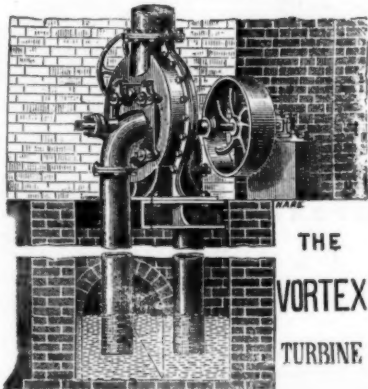
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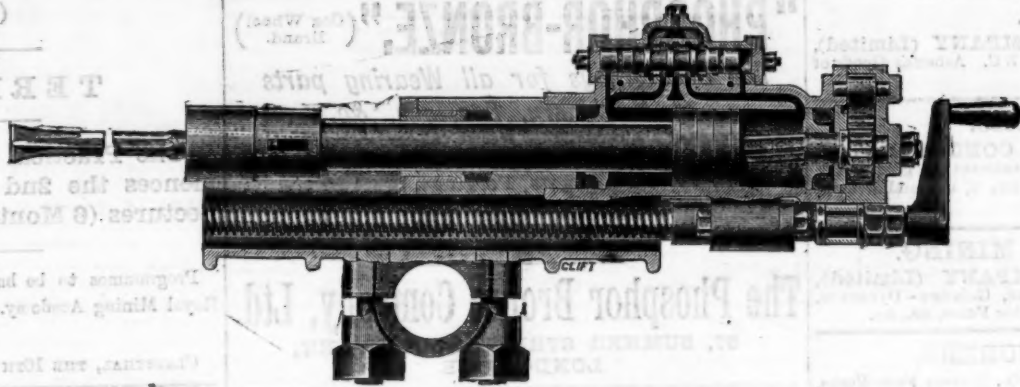


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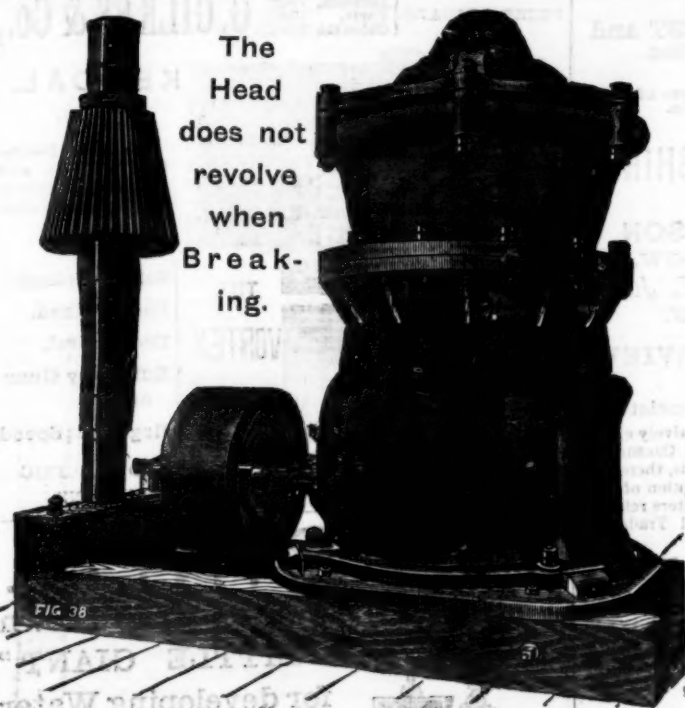
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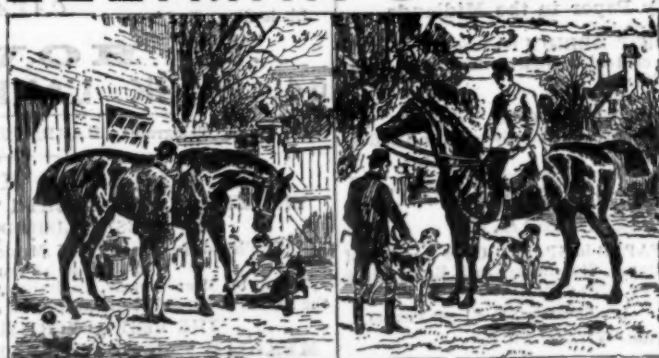
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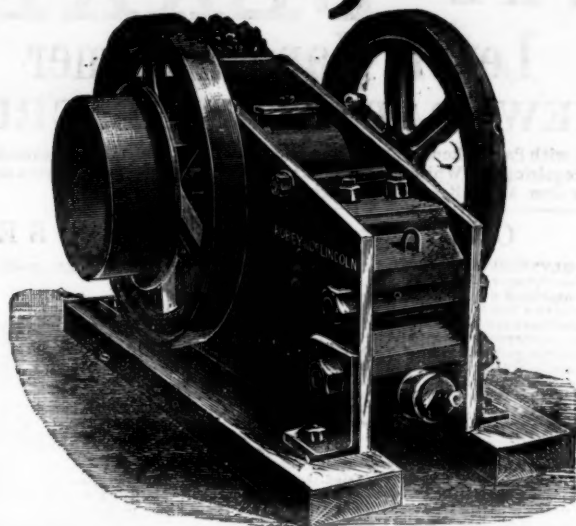
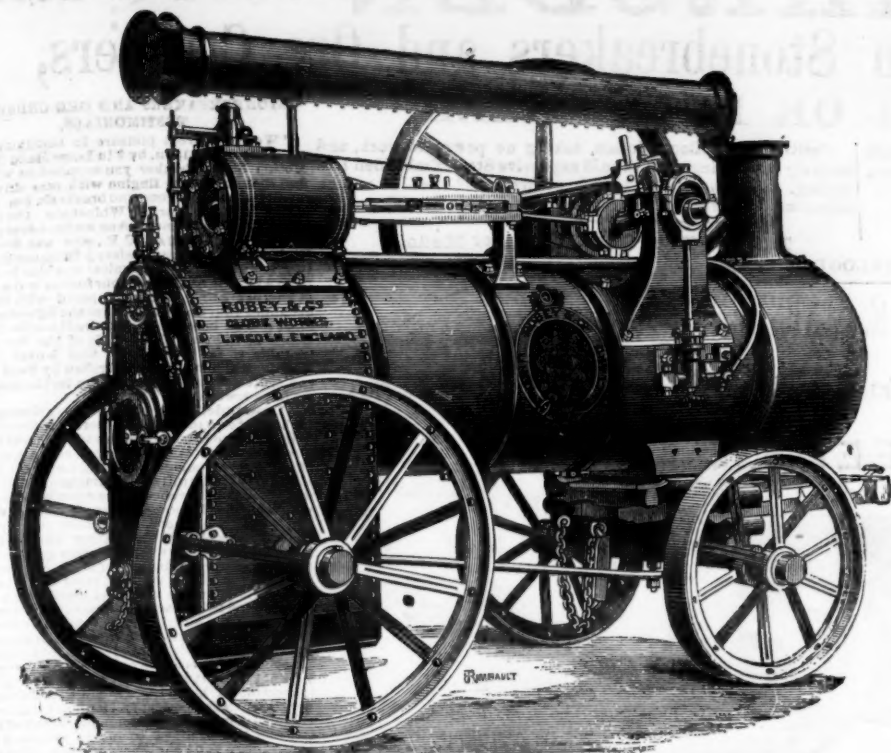
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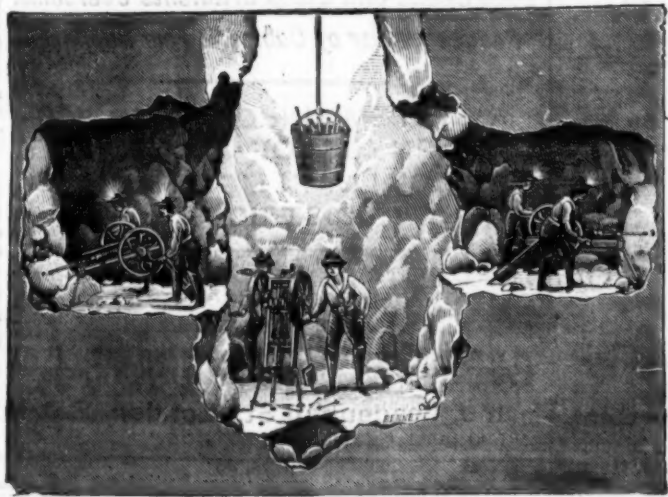
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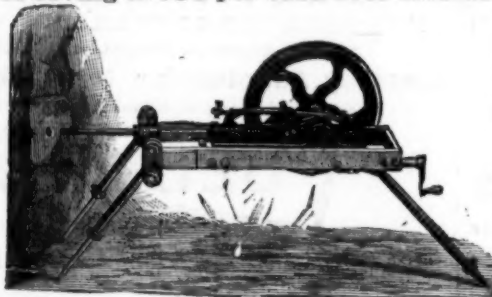
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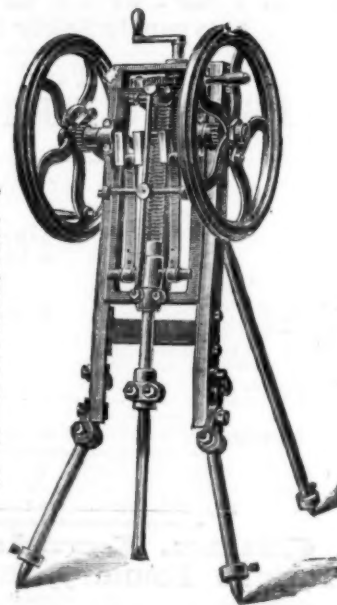
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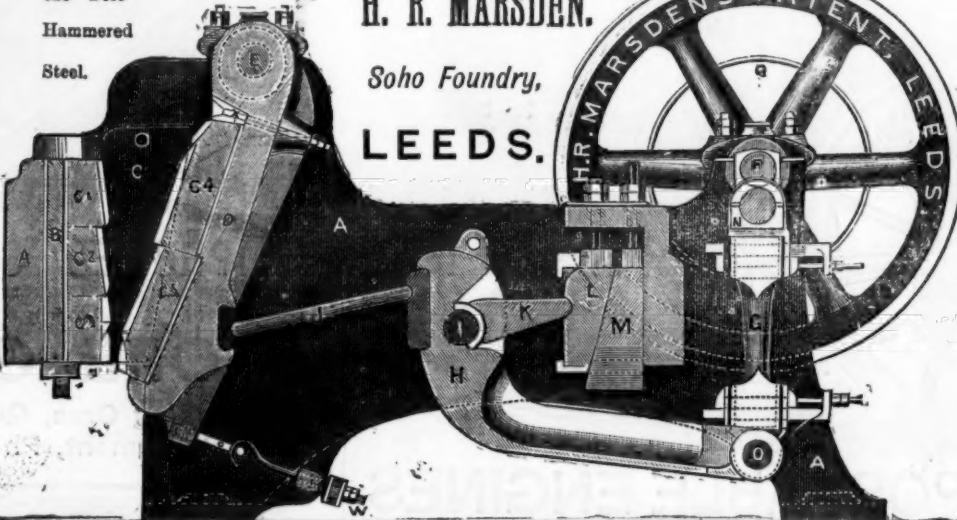
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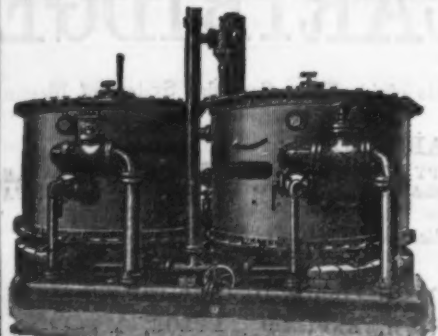
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